

# **Appendix I**

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Biological Report for  
Tri-State Generation & Transmission's Proposed  
San Juan Basin Energy Connection Project on  
Southern Ute Indian Reservation and  
Private Lands in La Plata County, Colorado



# Biological Report for Tri-State Generation & Transmission's Proposed San Juan Basin Energy Connection Project on Southern Ute Indian Reservation and Private Lands in La Plata County, Colorado



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# 1.0 Introduction

On behalf of Tri-State Generation and Transmission Association, Inc., Stratified Environmental & Archaeological Services, LLC (SEAS) conducted a biological inventory, field survey, and data review for sensitive, threatened, and endangered species on the Colorado portion of Tri-State Generation & Transmission's (Tristate's) proposed San Juan Basin Energy Connection (SJBEC) Project. The proposed project is situated on Southern Ute Indian Reservation (SUIR) and private lands in La Plata County, Colorado. Increasing electric load growth in the San Juan Basin region of Colorado and New Mexico in the commercial, residential, and industrial sectors has put a strain on Tri-State's existing electrical system. Although the current generation resources throughout the region are adequate to meet near-term load growth, additional transmission facilities are needed to ensure that power can be reliably delivered. As proposed, the SJBEC Project would relieve transmission constraints and improve the power delivery infrastructure in the San Juan Basin region of Colorado and New Mexico. The SJBEC will serve expanding electric loads of Tri-State's Cooperative Member, La Plata Electric Association (LPEA), among others.

The portion of the project located on the SUIR was inventoried during multiple on-site inspections between May 1 and August 12, 2012 with staff from various entities attending the on-sites, including:

- Southern Ute Indian Tribe (SUIT) Lands Division: Mike McLaughlin, Mary Anne Alexander, and Seana Cahill;
- SUIT Range Management Division: Deb Koenig, Gus Westerman, and Bill Gwinn;
- Tri-State Staff: Nicole Korbe, Diana Leiker, Dallas Smith, Denise Gibbons, Derrick Hall, and Marcus Lang;
- P3 Planning: William Penner;
- Goff Engineering: Brent Smith;
- ESC Engineering: Aaron Potts;
- Reliable Power Consultants: Rhonda Beam, Stepni Balzly, and Hank Wills;
- SEAS: Doug Loebig, Paula Fluder, Martin Plumer, Sarah Brownell, Randy Davis, Harrison Tahe, and Ewa Krakowska;
- Prymors Environmental Consulting: Peter Jensen and Matt Visocky

Information compiled from data reviews and field surveys was used to prepare the biological report. The purpose of the biological report is to analyze possible effects of the proposed SJBEC Project on species listed as threatened, endangered, proposed, or candidate under the Endangered Species Act (16 [United States Code] USC 1531 et seq.) of 1973. The project also addresses vegetation types, surface waters, wetlands, and potential effects of the project on migratory bird species protected under the Migratory Bird Treaty Act (U.S. Code Title 16, Chapter 7, 703-712) (MBTA). The U.S. Fish & Wildlife Service (USFWS), the Colorado Department of Parks and Wildlife (CPW), and other rare species databases were consulted to assemble a list of protected and sensitive species with potential to occur within the external boundaries of the SUIR in La Plata County, Colorado. Steve Whiteman, Wildlife Resource Management Division Head for the SUIT, was also consulted. During the prefield records review, neither the SUIT nor USFWS noted any known habitat or occurrences of threatened and endangered species in the proposed project area. During the biological field survey of the project area, SEAS documented habitat types and compiled lists of all plant and animal species observed. Doug Loebig, SEAS biologist, surveyed the project area on various dates between May 1 and October 8, 2012. These biological surveys include the

formal SUIR on-sites, private land surveys, and reconnaissance surveys of potentially sensitive areas on SUIR and private lands.

## 2.0 Project Description

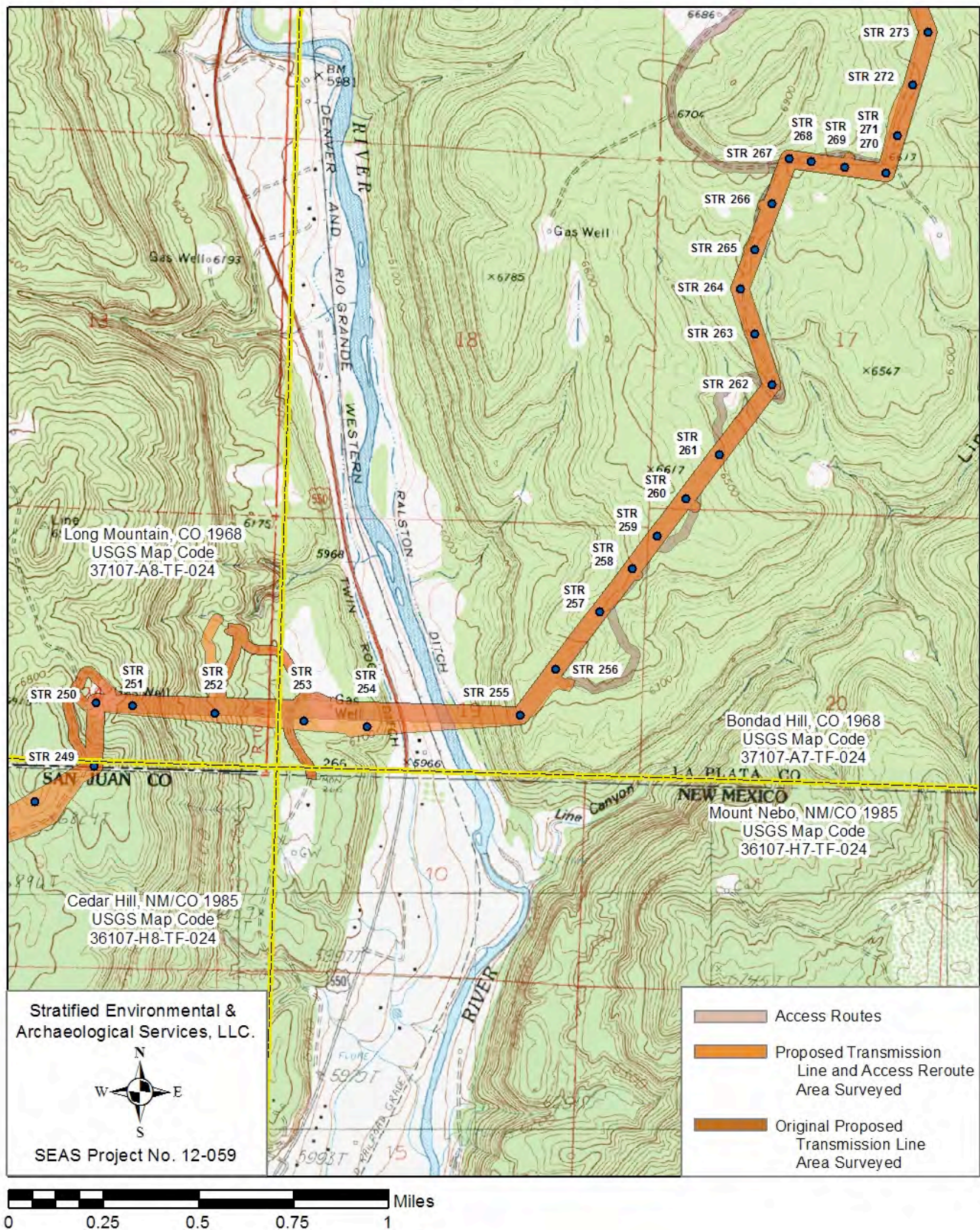
Tri-State's proposed SJBEC Project, which falls on lands managed by the Bureau of Land Management Farmington Field Office (BLMFFO), private lands (both in New Mexico and Colorado), and SUIR lands, runs approximately 65 miles southwest to northeast from near Fruitland, New Mexico to the existing Iron Horse Substation north of Ignacio, Colorado. As the project includes federal lands and permits, along with federal funds provided by the Rural Utilities Service (RUS), the proposed undertaking is subject to the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and Section 106 of the National Historic Preservation Act (NHPA), among other federal, state, and tribal laws and regulations. The BLM is acting as the lead federal agency for the Environmental Impact Statement (EIS) and NHPA (in New Mexico); the Bureau of Indian Affairs (BIA) and Southern Ute Indian Tribe (SUIT) are overseeing work conducted on SUIR and private lands in Colorado. The following report details the work conducted on SUIR lands and private lands in La Plata County, Colorado. The proposed project begins at the New Mexico-Colorado state line near the Animas River and continues northeast to a location about two miles northwest of Ignacio. The total project within Colorado consists of 22.7 linear miles (15.6 miles on the SUIR and 7.1 miles on private lands) of new transmission infrastructure; access roads account for another 54.1 miles (46.1 miles on the SUIR and 8 miles on private lands), although only 13.7 miles reflect new roads or roads to be improved as a result of the SJBEC Project (Figures 2.1 to 2.9). The remaining access utilizes existing infrastructure built to support tribal activities, the oil and gas industry, and other transmission lines. Table 2.1 provides location descriptions and information on the SJBEC's proposed permanent easement, area of potential effect (APE), and surveyed area. The proposed SJBEC permanent easement measures 412.5 acres of SUIR lands and 192 acres of private lands. The SUIT and BIA defined the area of potential effects (APE) as the proposed transmission-line right-of-way, access-road rights-of-way, and temporary use areas (TUAs). In addition, a 50-foot buffer zone was examined around all project components. The APE totals 567.6 acres on the SUIR and 230.1 acres on private lands. However, due to engineering revisions and modifications to avoid potential adverse effects to cultural or biological resources, the total surveyed area on the SUIR was 660.6 acres and private lands totaled 265 acres.

Tri-State, its member co-operative LPEA, and other regional utilities have been making improvements and additions to the electric system in the San Juan Basin over the years to maintain reliability. While improvements have helped, the need to improve electrical growth and reliability into the region to meet the needs of growing communities and industries has resulted in the proposal to construct the SJBEC Project—a new 230-kilovolt (kV) transmission line. This followed intensive engineering studies, consultation with other regional providers and electric cooperatives, a detailed alternatives analysis, public outreach/scoping, route refinement workshops, and agency consultation.



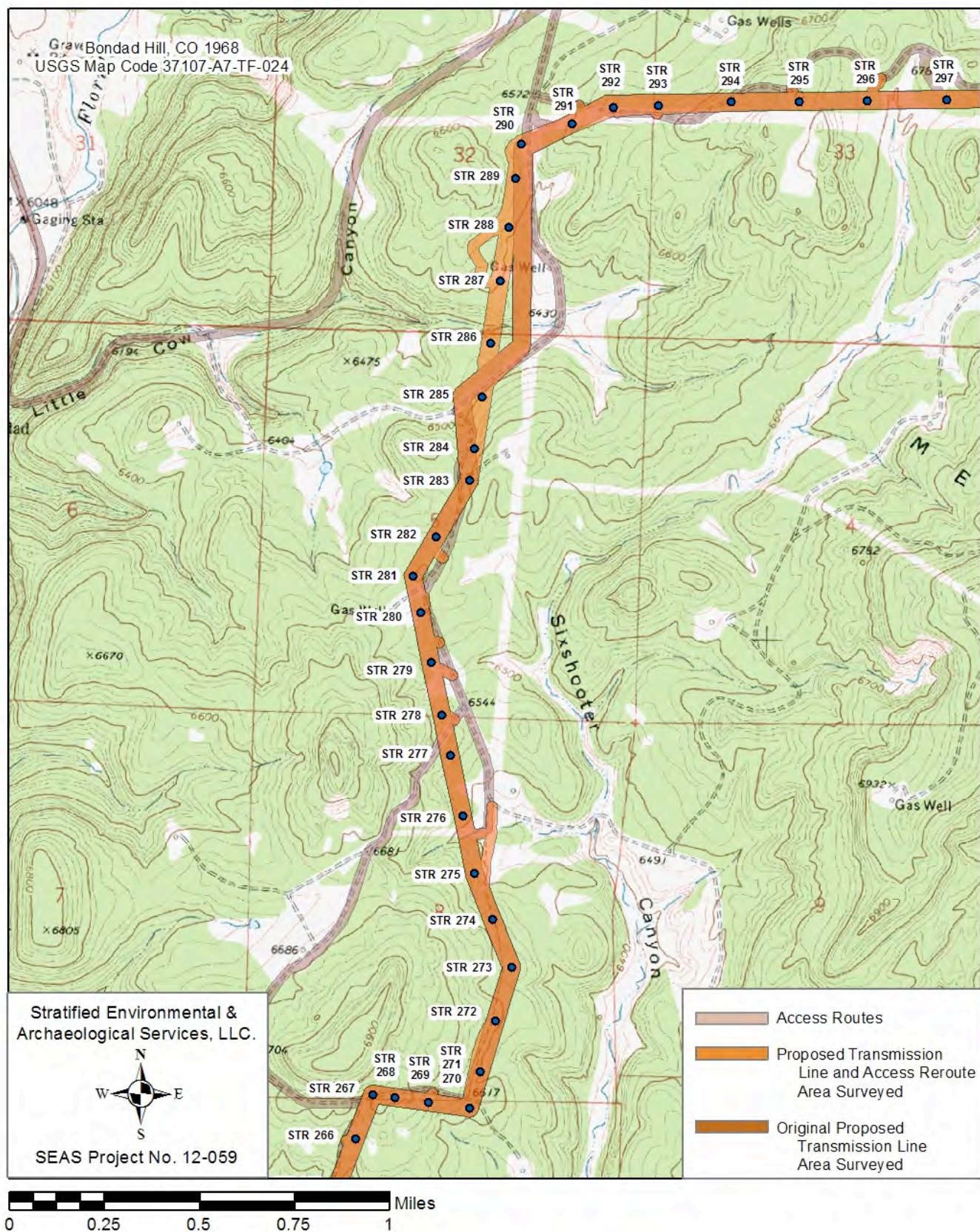
**Figure 2.1 General Project Vicinity Map**





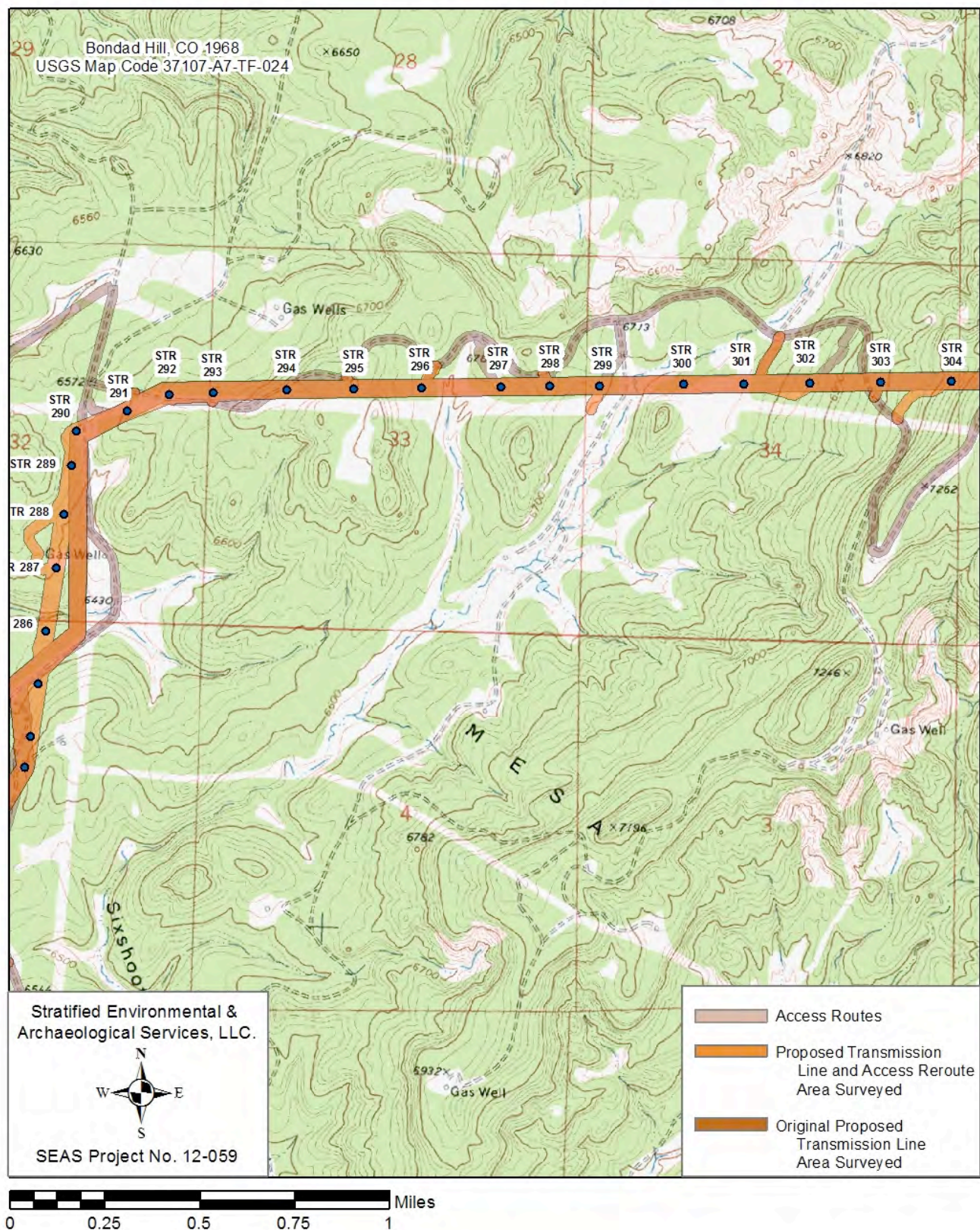
**Figure 2.2 Project Location Map 1: Long Mountain, CO 1968 and Bondad Hill, CO 1968 USGS 7.5' Series Quadrangles (1:24,000 Scale)**





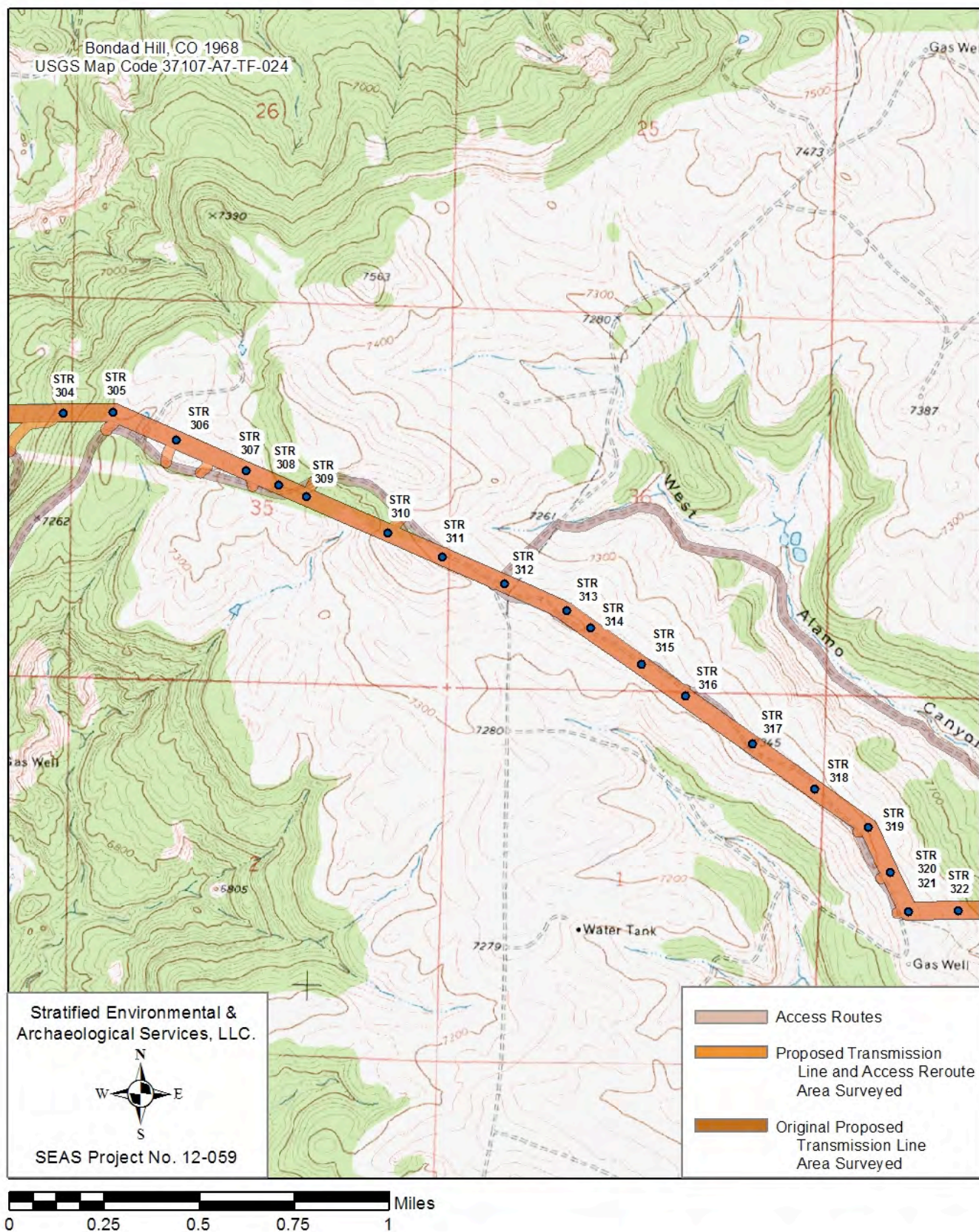
**Figure 2.3 Project Location Map 2: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





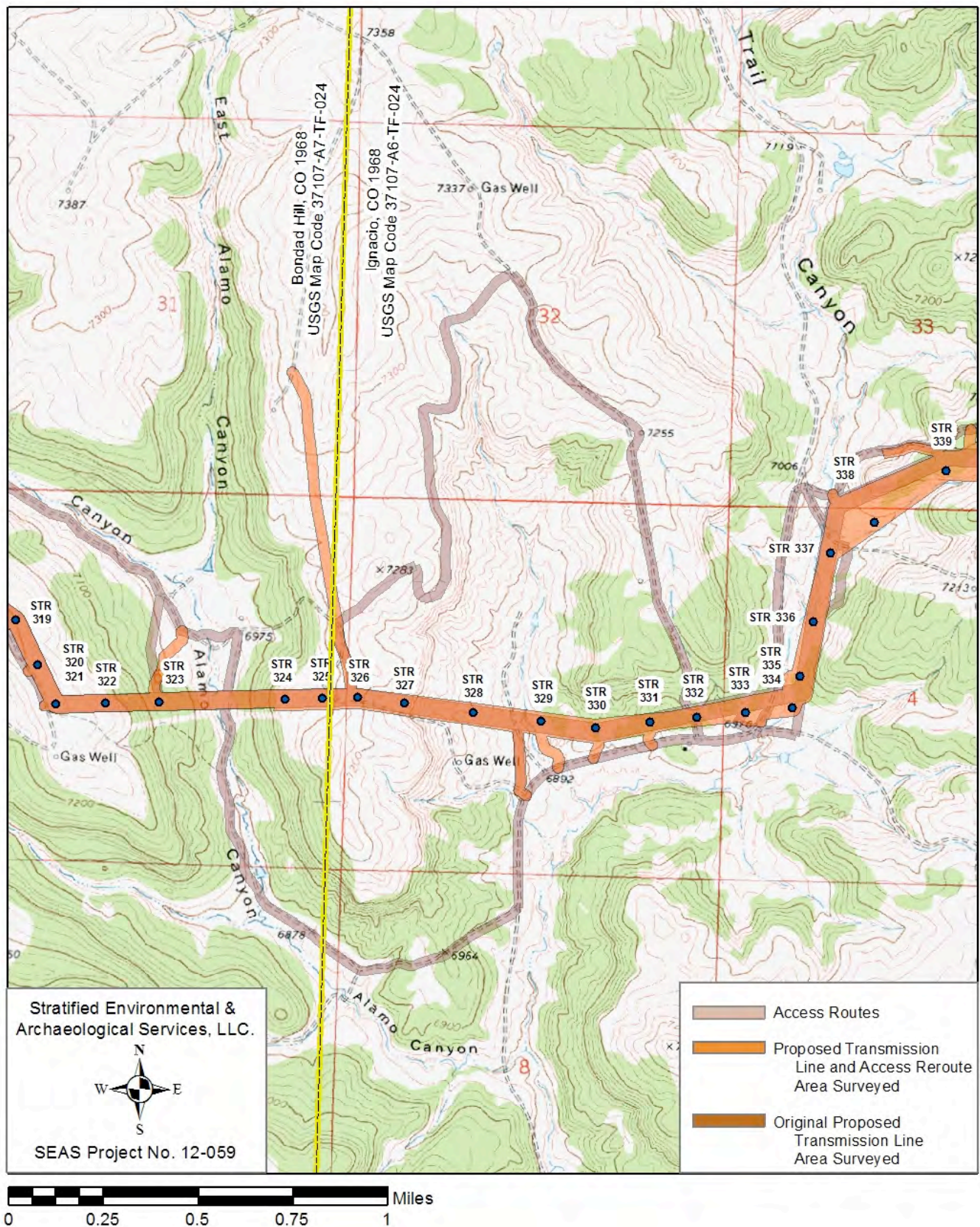
**Figure 2.4 Project Location Map 3: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





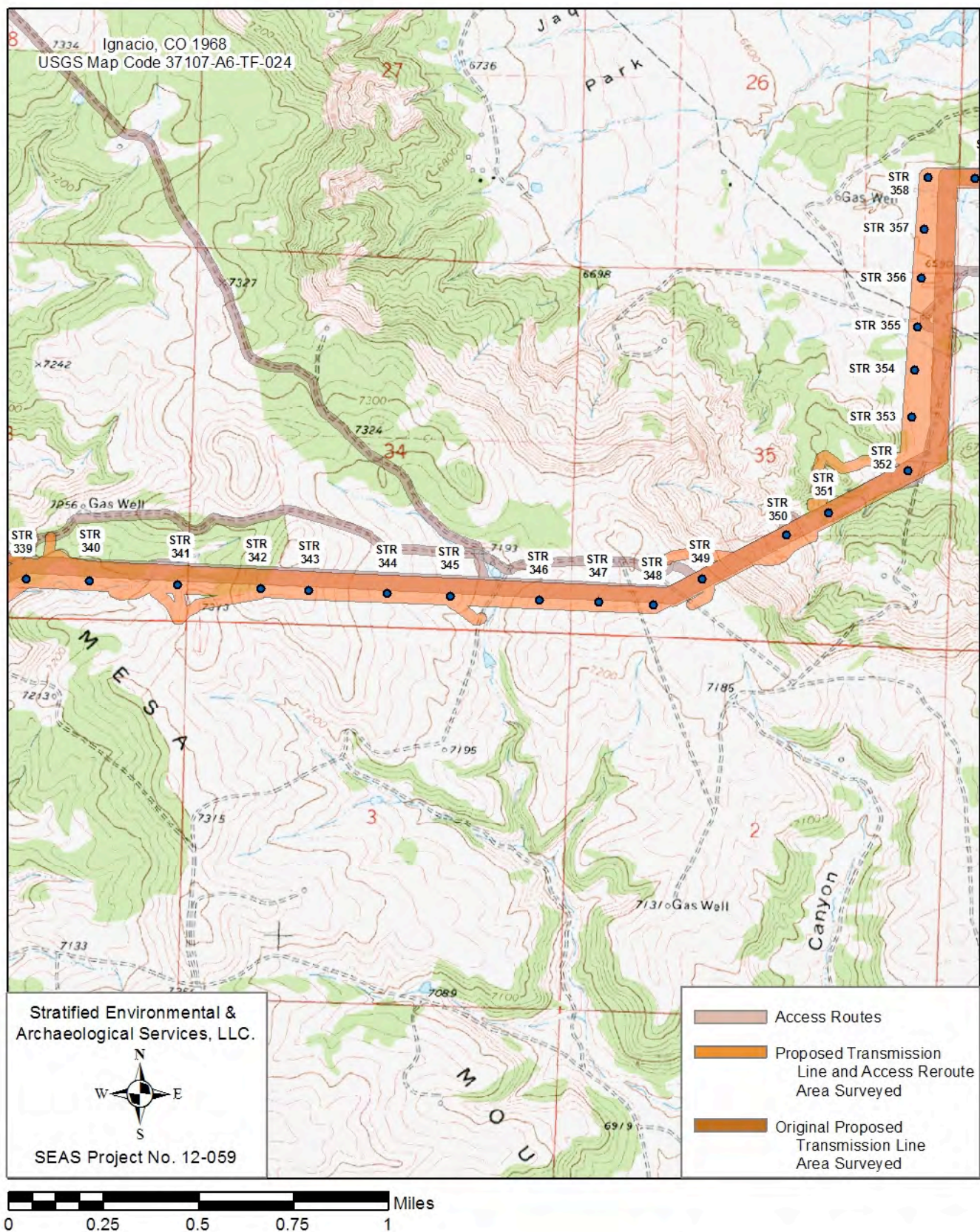
**Figure 2.5 Project Location Map 4: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





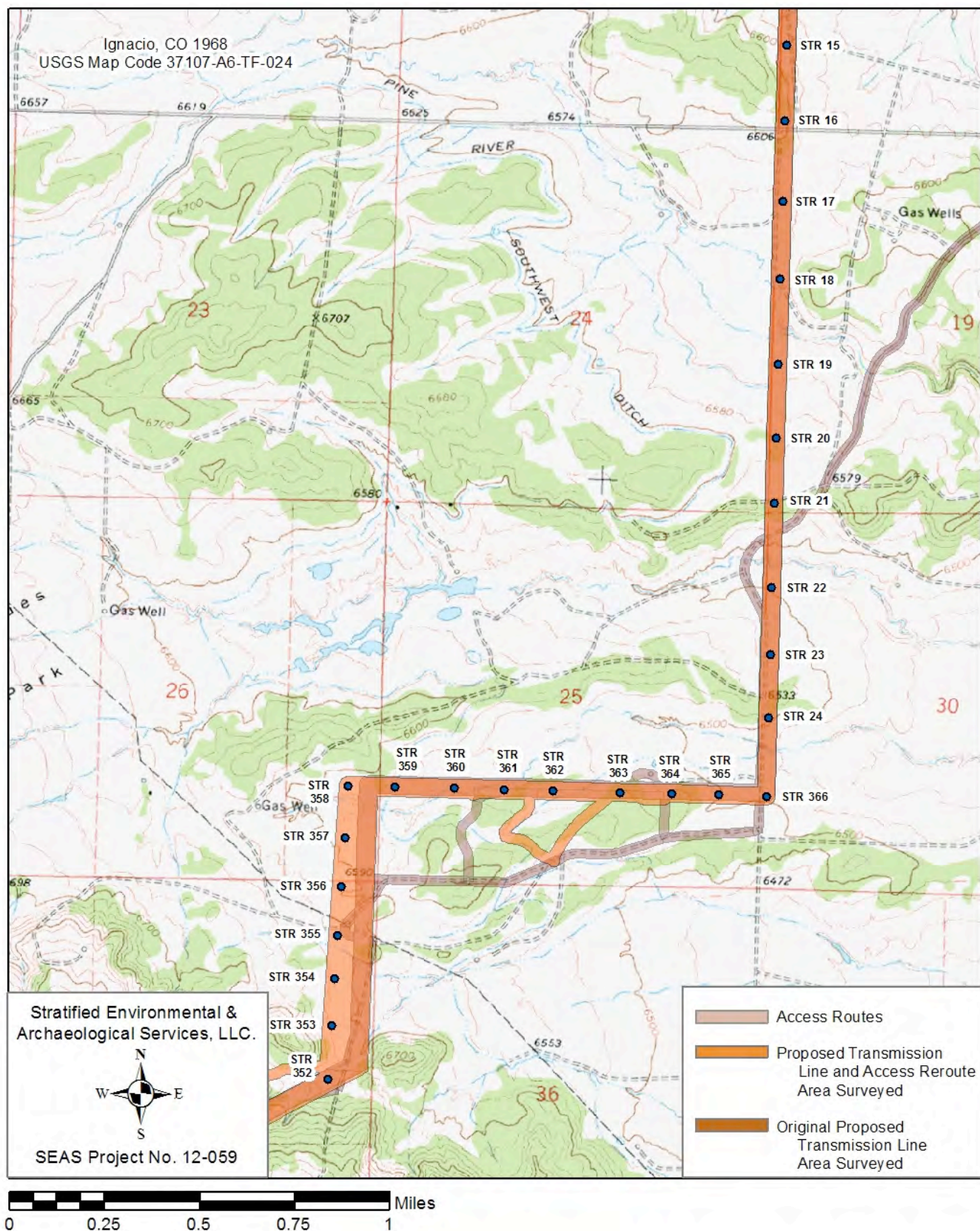
**Figure 2.6 Project Location Map 5: Bondad Hill, CO 1968 and Ignacio, CO 1968 USGS 7.5' Series Quadrangles (1:24,000 Scale)**





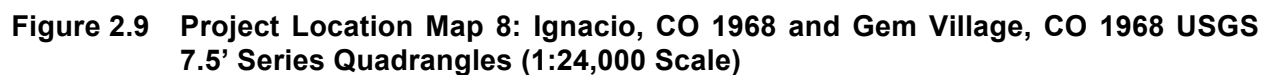
**Figure 2.7 Project Location Map 6: Ignacio, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





**Figure 2.8 Project Location Map 7: Ignacio, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**









**Figure 2.10 View West of Proposed Route Across Animas River Valley (Top) and View North of Iron Horse Substation and 115kV Transmission Line Northwest of Ignacio**

*BR for Tri-State Generation and Transmission's Proposed San Juan Basin Energy Connection Project on SUIR and Private Lands in La Plata County, CO  
SEAS 12-059 July 2013*

**Table 2.1 Project Area Information**

<b>Colorado Portion of the San Juan Basin Energy Connection Project</b>			
Legal Description, New Mexico Prime Meridian	Township 32N/Range 8W/Sections 4-8 Township 32N/Range 9W/Sections 1, 5, 8, 17, 19, & 20 Township 32N/Range 10W/Sections 16, 21, 22, & 24 Township 33N/Range 7W/Sections 6, 7, 18, 19, & 30 Township 33N/Range 8W/Sections 1, 12, 13, 20, & 24-36 Township 33N/Range 9W/Sections 25 & 32-36		
USGS 7.5' Series Quadrangle Map:	Long Mountain, CO 1968 = USGS Map Code 37107-A8-TF-024 Bondad Hill, CO 1968 = USGS Map Code 37107-A7-TF-024 Ignacio, CO 1968 = USGS Map Code 37107-A6-TF-024 Gem Village, CO 1968 = USGS Map Code 37107-B6-TF-024		
<b>Land Status</b>	<b>Permanent easement</b>	<b>APE (including TUAs)</b>	<b>Area surveyed (includes 50-foot buffers)</b>
SUIR	412.5 acres	567.6 acres	660.6 acres
Private	192 acres	230.1 acres	265 acres
Existing Iron Horse 115kV Line Segment (Private Lands)	81.7 acres	136.3 acres	146.6 acres
Other Private Lands	110.3 acres	93.8 acres	118.4 acres
<b>Total of All Lands (SUIR and Private)</b>	<b>604.5 acres</b>	<b>797.7 acres</b>	<b>925.6 acres</b>

The proposed transmission line enters Colorado (and the SUIR) roughly 0.8 miles west of the Animas River. From this point, the line continues east and crosses the Animas River and U.S. Highway 550 with a single span, thence heading northeast across the Mesa Mountains on the SUIR following existing access roads and other facilities to the greatest extent feasible for approximately 15.6 miles. After exiting the SUIR, the proposed route continues north and east for approximately 2 miles to a point where it intersects LPEA's existing Iron Horse 115kV transmission line. This entire segment across the SUIR and private lands will include construction of two- or three-pole wood tower structures (metal poles will occasionally be used due to engineering considerations), access to these locations including existing and proposed new roads, pulling sites for tensioning conductor, and TUA's.

From the point where the SJBEC project intersects the Iron Horse line to the project terminus at the Iron Horse substation (See Figures 2.1 and 2.2), construction will be limited to hanging new conductors on the existing structures. All access will be on the roads presently used by LPEA to maintain the line. In addition, helicopters will be used to install all conductors for the line in Colorado. A lighter weight sock line may be flown initially, then pulled and replaced later with the larger steel line using equipment at designated pull-sites. The Iron Horse substation will also be expanded to accommodate the new 230kV infrastructure.

To the maximum extent feasible, the new transmission line was aligned to parallel existing rights-of-way for transmission, pipeline, access, and other linear facilities. The proposed permanent right-of-way width

requested for this transmission line is 150 feet (ft), with access easements varying in width from 20 to 50 feet. These widths vary due to topographical considerations, the required extent of cut-and-fill, and the proximity to other infrastructure. Other considerations and limitations included identified archaeological resources, in-ground pipelines, existing and proposed well pads, and sensitive biological resources.

As described above, surface disturbance levels within the Colorado portion of the project are expected to be moderate-to-high, including: tree cutting, tower installation, stringing the transmission line with helicopters and pull trucks, road construction, expansion of the existing Iron Horse substation, grading, re-contouring, and reclamation activities.

## 3.0 Methodology

Doug Loebig surveyed the APE and buffers between May 1 and October 8, 2012. The weather during the survey varied from hot and clear to cool and cloudy. It should be noted that southwestern Colorado was subject to a late winter to late fall drought in 2012 and field conditions were not ideal. The biological survey investigation was ultimately conducted to assess the current state and nature of biological resources within the APE and to make recommendations for further biological fieldwork, if needed. Maps have been generated depicting the various habitat types/plant communities within the proposed SJBEC easement to serve as baseline data (see Section 4).

The field investigations also resulted in the collection of biological points of interest (BPIs) within and adjacent to the project area that may be of a sensitive nature. BPIs collected during the investigations included noxious weed infestations, rare plant and animal habitats, verified rare species locations, prairie dog complexes, wetlands, vacant or active mammal dens, and areas with Migratory Bird Treaty Act (MBTA) concerns, such as nest sites and high quality nesting habitat (e.g., riparian woodland forest/woodland and protected cliff faces). The project area, plant communities, and sensitive biological resources (biological points of interest [BPIs]) were mapped with GPS equipment. Specifically, data was collected with sub-meter accurate Trimble Geo XH and XT units. The documented biological resources are divided into four categories and discussed in more detail below:

- Threatened, Endangered, and Species of Special Concern Habitat
- Surface Waters and Wetlands
- Vegetation Communities and Noxious Weeds
- Wildlife

### 3.1 *Threatened and Endangered Species*

Prior to the field survey, a list of protected and sensitive species with potential to occur in La Plata County, Colorado was assembled from the USFWS, CPW, and various rare species databases and websites. Habitat types and suitability for protected and unprotected sensitive species listed by the USFWS and State of Colorado with potential to occur in La Plata County were reviewed prior to fieldwork. The SUIR Wildlife Resource Management Division was also contacted regarding if known rare species locations and/or potentially suitable habitats for rare species occur within the APE. While no known rare species locations are known to within the SUIR portion of the APE, the Animas River was identified as an area where potentially suitable rare species habitats could occur, such as for the bald eagle (*Haliaeetus leucocephalus*), Southwestern willow flycatcher (*Empidonax trailii extimus*), and yellow-

billed cuckoo (*Coccyzus americanus*). Habitat suitability for rare species was assessed by pedestrian surveys conducted in regular intervals throughout the APE.

### 3.2 Surface Waters and Wetlands

Potential jurisdictional wetlands, as defined by the U.S. Army Corps of Engineers (USACE 1987) and in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2006), occur in several areas on the Colorado side of the SJBEC Project and were recorded as BPIs. However, both the existing Iron Horse 115kV transmission line, and the proposed new 230kV line, will span all potential wetlands. Additionally, the SJBEC Project would use an existing road with a culvert (requiring no improvements) to cross a single, delineated wetland to access an area where construction efforts are proposed. By implementing environmental protection measures, there would be little to no direct permanent effects to wetlands in the study area from SJBEC Project.

### 3.3 Vegetation Resources and Noxious Weeds

Various botanical keys were consulted for species identifications, including *A Flora of New Mexico* (Martin and Hutchins 1981), *Arizona Flora* (Kearney and Peebles 1960), *A Utah Flora* (Welsh et al. 1993), *Weeds of the West* (Whitson et al. 1999), *Colorado Flora: Western Slope* (Weber 1987), *The Manual of the Plants of Colorado* (Harrington 1954), *Western Wetland Flora* (USGS 2006), *Field Guide to Intermountain Rushes* (USFS 1997), *Field Guide to Intermountain Sedges* (USFS 1998), *A Field Guide to the Grasses of New Mexico* (Allred 2005), and *The Manual of the Grasses of the United States* (Hitchcock 1971). A list of all identified plant species observed during the biological field study is provided in Section 4, as are plant community descriptions. For the plant community descriptions in Section 4, vegetation cover over the ground surface was visually estimated and was not quantitatively obtained.

### 3.4 Wildlife Resources

Bird species identifications were verified visually with binoculars (10 x 42) using the *Stokes Field Guide to Birds: Western Region* (Stokes and Stokes 1996) or *The Sibley Guide to Birds* (Sibley 2000). Bird vocalization identifications are based on the National Audubon Society's (1996) *Interactive CD-ROM Guide to North American Birds*. Mammal identifications are based on Fitzgerald et al. (1994) and amphibian and reptile species identifications are based on Hammerson (1999). Lists of animal species observed or inferred from evidence (e.g., tracks, feces, scrapes, or vocalizations) at the project site were compiled. All burrows and nests were examined carefully for signs of recent occupation. Potential raptor habitat, such as ledges, cliffs, or large trees within one-third mile of project areas were scanned with high-powered optics for evidence of roosts and nests, when feasible. The sandstone ledges and small cliffs on both sides of the Animas River Valley were also surveyed in May for raptor nests. Encounters with sensitive species, including non-endangered raptors, were noted and plotted with GPS equipment. Gunnison's prairie dog (*Cynomys gunnisoni*) colonies and complexes are routinely mapped with GPS equipment given the affinity of other rare species for such habitats, such as the Western burrowing owl (*Athene cunicularia hypugea*), mountain plover (*Charadrius montanus*), and black-footed ferret (*Mustela nigripes*).



## 4.0 Environmental Setting

Elevation in the project area ranges from 5,960 ft (1,816 meters m) in the Animas River Valley to 7,420 ft (2,261 m) above mean sea level (amsl) on the western edge of the Mesa Mountains. The project area in Colorado begins by crossing the steep Animas River Valley and then proceeds over the Mesa Mountains from west to east. The transmission line easement then descends the steep northeast slope of the Mesa Mountains and proceeds north through more gentle terrain of alluvial fans and low ridges to the terminus, situated two miles northwest of Ignacio. The project occurs in an anthropogenic landscape of irrigated ranches and farms, natural gas production infrastructure, residential areas, and a vast network of roads within a mesa and canyon landscape of scrublands, woodlands, and chaparral.

The nearest settlement for which historical climate records are available is from Ignacio (Station 054250) for the period 1948 to 1993 (WRCC 2012). Table 4.1 summarizes climatic data from the station. Average annual maximum temperature at the Ignacio station is 63.4° Fahrenheit (F) and average annual minimum temperature is 28.2° F for the same period. Average annual total precipitation is 14.02 inches and average total snowfall is 28.9 inches. April, May, and June are the driest months of the year, ranging from 0.53 inches in June to 0.91 inches in April. July, August, and September are the wettest months of the year, ranging from 1.41 inches in July to 1.69 inches in August (WRCC 2012). The frost-free growing season lasts from 110 to 130 days (NRCS 2012). Throughout the Northern Southwest, the marked increase in precipitation during late summer is caused by a monsoonal circulation pattern. This pattern originates when the hemisphere warms up in summer and shifts the westerlies and sub-polar lows northward. This pushes a high-pressure cell (the Bermuda High) over the central United States. The western edge of the Bermuda High rotates clockwise sending moisture laden air into the Southwest from the south. The convective air currents created by the hot lowland deserts and the convergence of the moist air masses with the cooler highland air often creates powerful afternoon thunderstorms from mid to late summer (Sellers and Hill 1974; Gillispie 1985: 14-15).

**Table 4.1 Weather Data at the Ignacio 1 N, Colorado Climate Station from 1948 to 1993 (Station 054250)**

Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Maximum Temp. (F°)	38.8	44.6	52.1	62.2	71.9	82.9	87.5	84.7	77.5	66.1	51.4	41.8	63.4
Minimum Temp. (F°)	7.1	12.7	20.6	26.6	33.7	41.1	49.4	47.7	39.4	29.9	19.5	10.5	28.2
Total Precip. (in)	1.3	0.98	1.14	0.91	0.90	0.53	1.41	1.69	1.42	1.5	1.06	1.17	14.02
Total Snowfall (in)	9.5	6.2	4.0	1.2	0.1	0	0	0	0	0.3	1.4	6.2	28.9

The San Juan Dome and the San Juan Basin were initially formed by tectonic shifts, episodic uplifts, and related volcanism that occurred during Late Cretaceous times, known as the Laramide Orogeny. Surface geology in the project consists primarily of the San Jose Formation. The San Jose Formation is of Eocene age and comprised of various sandstone, sandy shale, conglomerate, and tuff members derived from low gradient stream and lake deposits (Campbell and Brew 1996: 62-64). The formation has a higher content of sand on the north side, suggesting a northern source area (San Juan Dome) for the fluvial deposits. The San Jose overlies the Paleocene Animas Formation to the north and the lower to middle Paleocene Nacimiento Formation to the south, which grade into each other south of the project (Aubrey 1991: B18-B21). Quaternary glacial outwash and loess deposits blanket much of the project, particularly in the Mesa

Mountains north to the project terminus. The glacial outwash deposits overlying the San Jose Formation in the Mesa Mountains date to the early Pleistocene (Blancan) and consist of Uncompahgre Formation cobbles of quartzite, hornblende gneiss, porphyritic dike and volcanic rocks, granitic rocks, quartz, chert, siliceous rocks from Paleozoic limestone, and sandstone. These glacial outwash deposits are often overlaid with a thin calcic layer of laminar structure less than a foot thick (Scott and Moore 2007: 5-6).

Soils in the project area vary considerably. In the western portion of the project, residual and colluvial soils occur on ridges and slopes, with alluvial fan deposits near the base of slopes and in valleys. In the Mesa Mountains, sediments ultimately derived from sandstone and shale residuum mix with Quaternary outwash and loess deposits in a colluvial depositional environment, with narrow alluvial terraces and side slope fans along the intermittent stream courses in canyon bottom settings. Below the Mesa Mountains north to the project terminus, the soils are often derived from calcareous loess, as well as mixed Holocene alluvial and colluvial deposits of fans and slopes. Soil classifications and associated parent materials are provided in Table 4.2 (Pannell 1981), with approximate pole spans for each soil type.

**Table 4.2 Soil Types Within the Project Area**

<b>Soil Classification</b>	<b>Parent Material/ Landform</b>	<b>Approximate Pole Spans</b>
Arboles Clay, 3 to 12 percent slopes	Alluvium derived from shale/ side slopes and upland valleys	352-355; 363; 21; 17; 12-15; 4-5; 3; 0-2
Baca Variant, 3 to 12 percent slopes	Alluvium/colluvium derived from shale/ upland valleys and mesas	365-23;
Bayfield Silty Clay Loam, 1 to 3 percent slopes	Alluvium derived from shale/ valley bottoms	358-362; 22; 10; 3-4
Bodot Clay, 3 to 10 percent slopes	Residuum/colluvium derived from shale/ hills	11; 8; 6
Buckle Loam	Alluvium derived from sandstone/ upland valleys	Between 328-329; 334-338
Dulce-Travessilla-Rock Outcrop Complex, 6 to 50 percent slopes	Residuum/colluvium derived from sandstone/ foothills and ridges	252-254; 256-275; 277-279; 283-295; 297-299; 300; 302-305; 307-311;
Durango Cobbly Loam, 3 to 20 percent slopes	Glacial outwash/ dissected mesa tops and ridge tops	311-322; 324-326; 341-349; 364
Mikim Loam, 3 to 12 percent slopes	Alluvium/ alluvial fans and foothill valleys	276-277; 282-283; 295-297; between 299-300; 301;
Pescar Fine Sandy Loam	Stratified calcareous alluvium/ floodplains	Between 254-255
Pulpit Loam, 3 to 12 percent slopes	Loess/ mesa tops	279-281
Rock Outcrop	Sandstone bedrock/ cliffs, breaks, ridges, and mountainsides	255
Sili Clay Loam, 3 to 6 percent slopes	Alluvium derived from shale/ upland valley bottoms and fans	Between 323-324; 356-357; 18-20;

**Table 4.2 Soil Types Within the Project Area (Continued)**

Soil Classification	Parent Material/ Landform	Approximate Pole Spans
Witt Loam, 3 to 8 percent slopes	Calcareous loess/ uplands and mesas	305-307
Zyme Clay Loam, 3 to 25 percent slopes	Residuum/colluvium derived from shale/ ridges and hills	Between 2-3
Zyme-Rock Outcrop Complex, 12 to 65 percent slopes	Shale bedrock and residuum/colluvium derived from shale	249-252; 323; 324; 327-328; 329-333; 339-340; 349-351; 20; 15-16; 9; 7;
















## 4.1 Plant Communities

Seven general plant community types were defined within the project area, including big sagebrush scrubland (BSSLP), mixed conifer woodland (P-J 1-3), lower montane chaparral (LMC 1 and 2), irrigated pasture (IP), emergent wetlands (BPI's 3-7, 9, and 10), riparian shrubland (BPI 15), and riparian gallery forest (BPI 20) (Figures 4.1 to 4.11). It should be noted that the plant community maps distinguish between communities delineated in the field by the project biologist and those delineated by Parametrix from aerial photography. Woodlands and forests are defined based on the presence of non-interlocking or interlocking tree crowns, respectively. With the exception of wildfire, vegetation types in the region are largely driven by abiotic factors that influence the soil moisture regime, such as soil type, soil depth/water retention capacity, elevation, slope, orographic factors, and aspect. However, these factors influence one another in complex ways but tend to sort species along a moisture gradient. In the absence of agriculture, deep alluvial soils typically support big sagebrush scrubland, while mixed conifer woodlands usually occur on shallow and coarser soil types. Lower montane chaparral communities form at higher elevations in the Mesa Mountains and are sustained by periodic wildfire events. Several aspects of the mixed woodland and chaparral communities occur, and prolonged transitional zones are present as well, typically corresponding with soil type transitions. Many plant species occur in more than one community type. While some plant species are habitat generalists, rather than narrow habitat affiliates, micro-topographical attributes influence species composition and distribution with respect to soil moisture as well. The emergent wetland communities are largely the result of irrigation runoff from nearby pastures into intermittent arroyos and drainages, as perennial surface water does not seem to occur naturally within the proposed action area, with the exception of the Animas River, and possibly Rock Creek and Klusman Park Creek. Regardless, if the two creeks were perennial sources of water prior to historic settlement, their flow rates are now greatly enhanced by irrigation runoff. A list of plant species observed in the project area is provided in Table 4.3. However, given the extreme drought of the 2012 growing season, numerous other species are likely present and many species probably remained dormant or did not flower.

### 4.1.1 Big Sagebrush Scrubland (BSSLP)

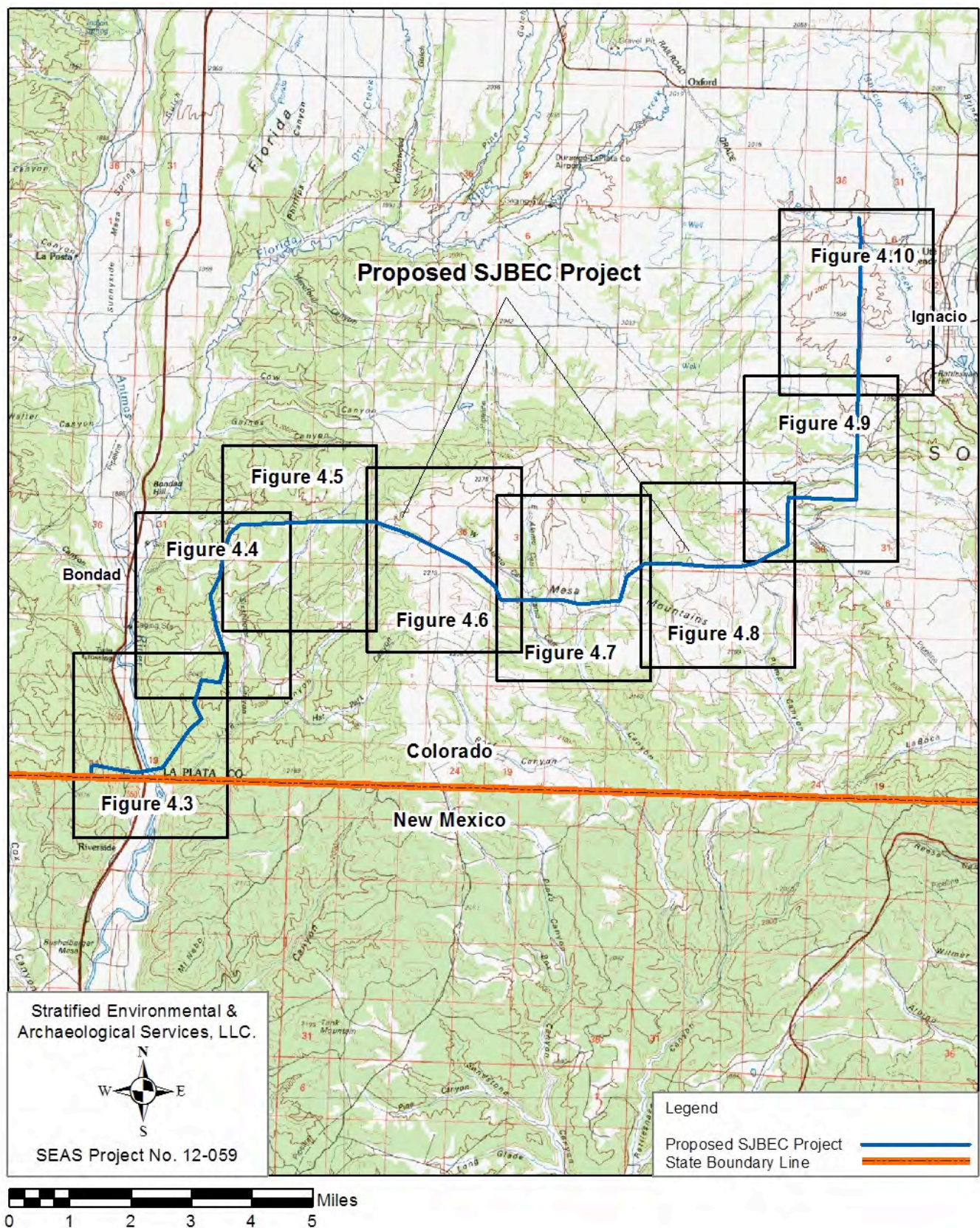
Big sagebrush scrubland occurs primarily on the north side of the project, on medial to lower slopes, alluvial fans, and alluvial terraces where relatively deep soils occur (Figures 4.3, 4.4, and 4.6 to 4.10). Small patches of the habitat occur throughout the remaining project area as well, primarily in canyon bottom settings where deep lower slope and alluvial fan deposits are present. Vegetation cover is estimated to range from 40 to 60 percent and cryptogamic soil crusts are patchy and generally not well developed. The overstory is dominated by big sagebrush (*Artemisia tridentata*) stands 2 to 4 ft high,

## Master Key to Colorado Vegetation Zone Maps

SEAS Vegetation Codes	PMX Aerial Photography Projection Codes		
		BPI	Biological Place of Interest
		BSSLP	Great Basin Desert Scrubland
		I P	Irrigated Pasture
		LMC1	Lower Montane Chaparral 1
		LMC2	Lower Montane Chaparral 2
		PJ1	Pinon-Juniper Woodland 1
		PJ2	Pinon-Juniper Woodland 2
		PJ3	Pinon-Juniper Woodland 3

**Figure 4.1 Plant Community Map Master Key**

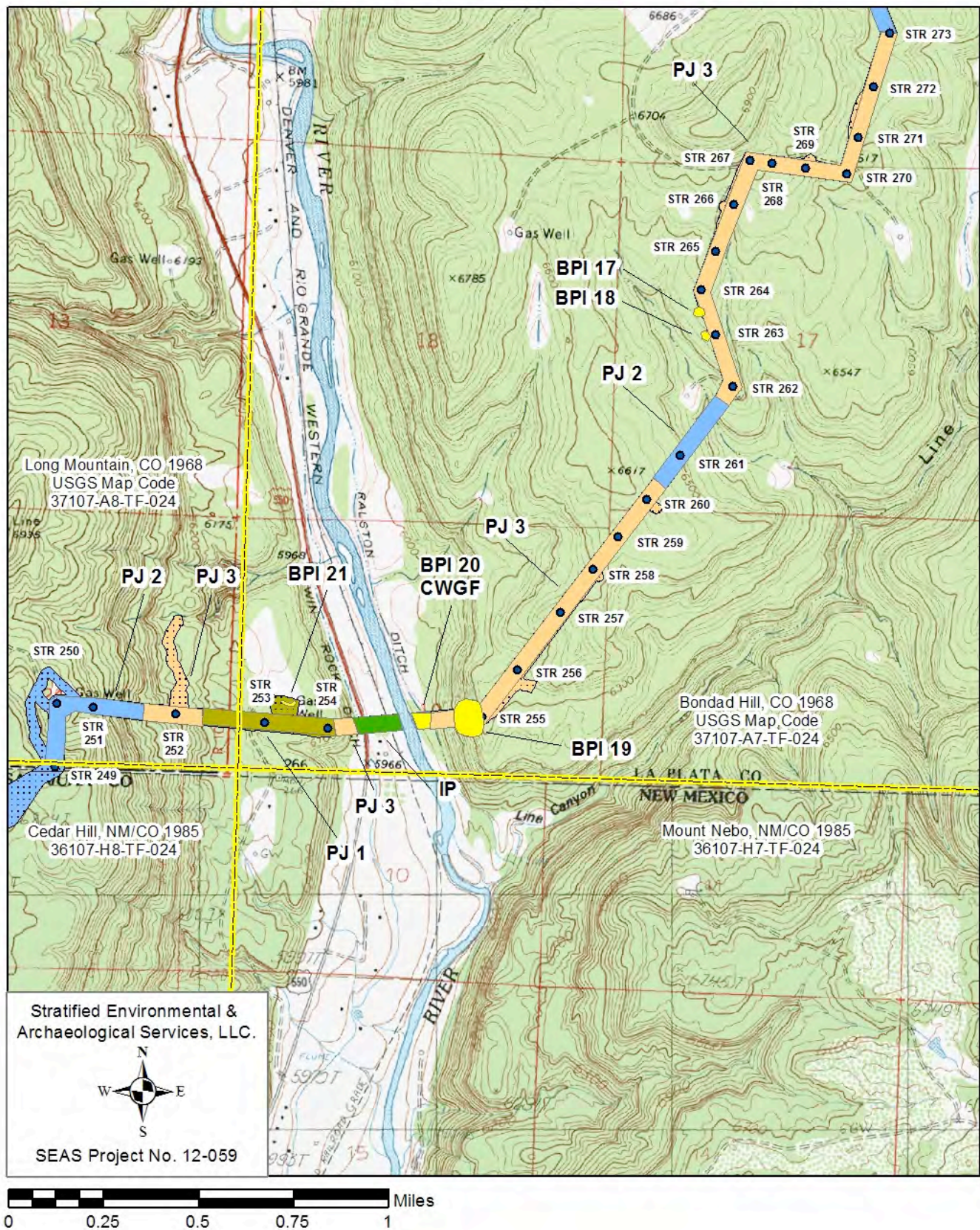




**Figure 4.2 Index Key for Vegetation Maps**

BR for Tri-State Generation and Transmission's Proposed San Juan Basin Energy Connection Project on SUIR and Private Lands in La Plata County, CO  
SEAS 12-059 July 2013

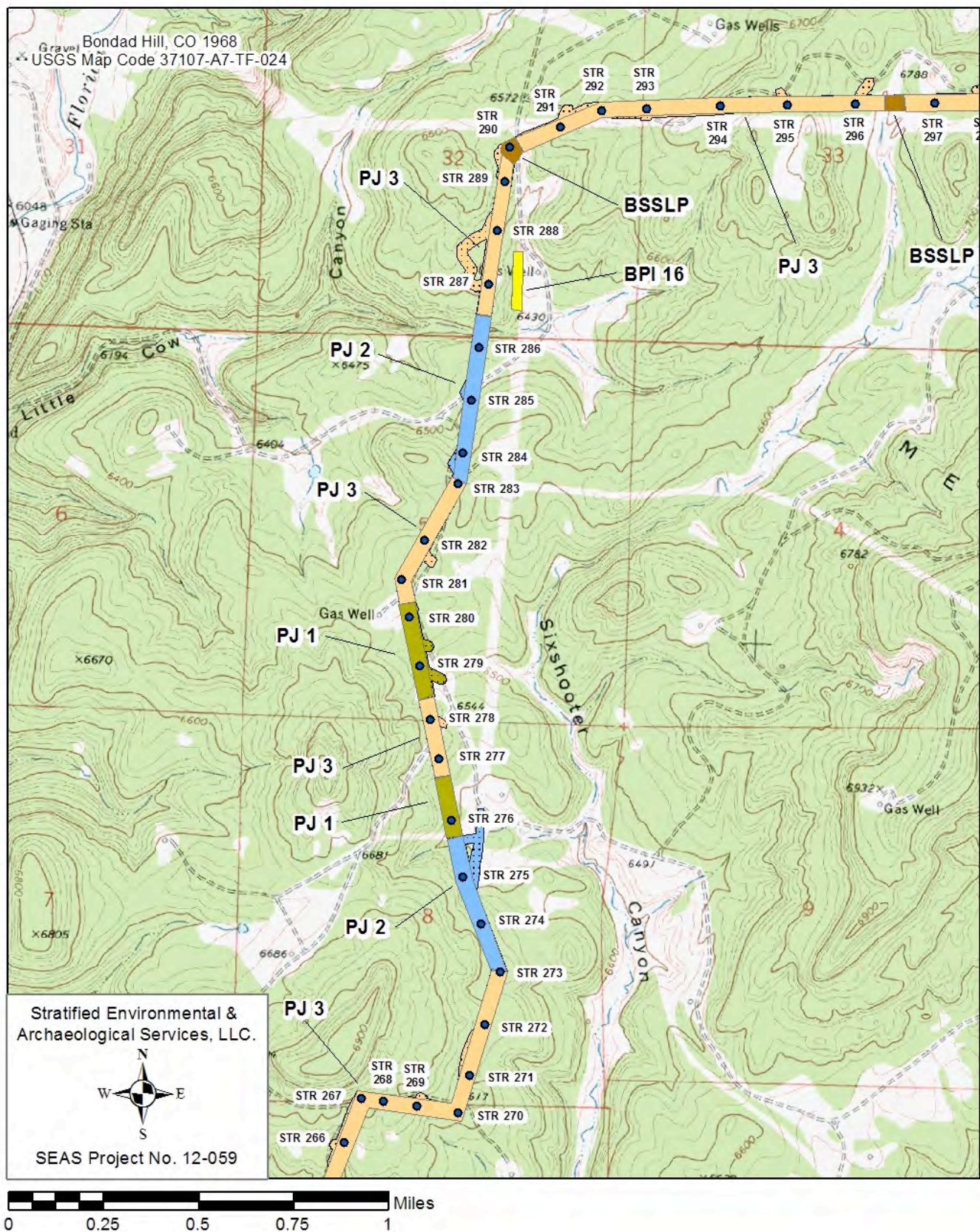




**Figure 4.3 Vegetation Map 1: Long Mountain, CO 1968 and Bondad Hill, CO 1968 USGS 7.5' Series Quadrangles (1:24,000 Scale)**

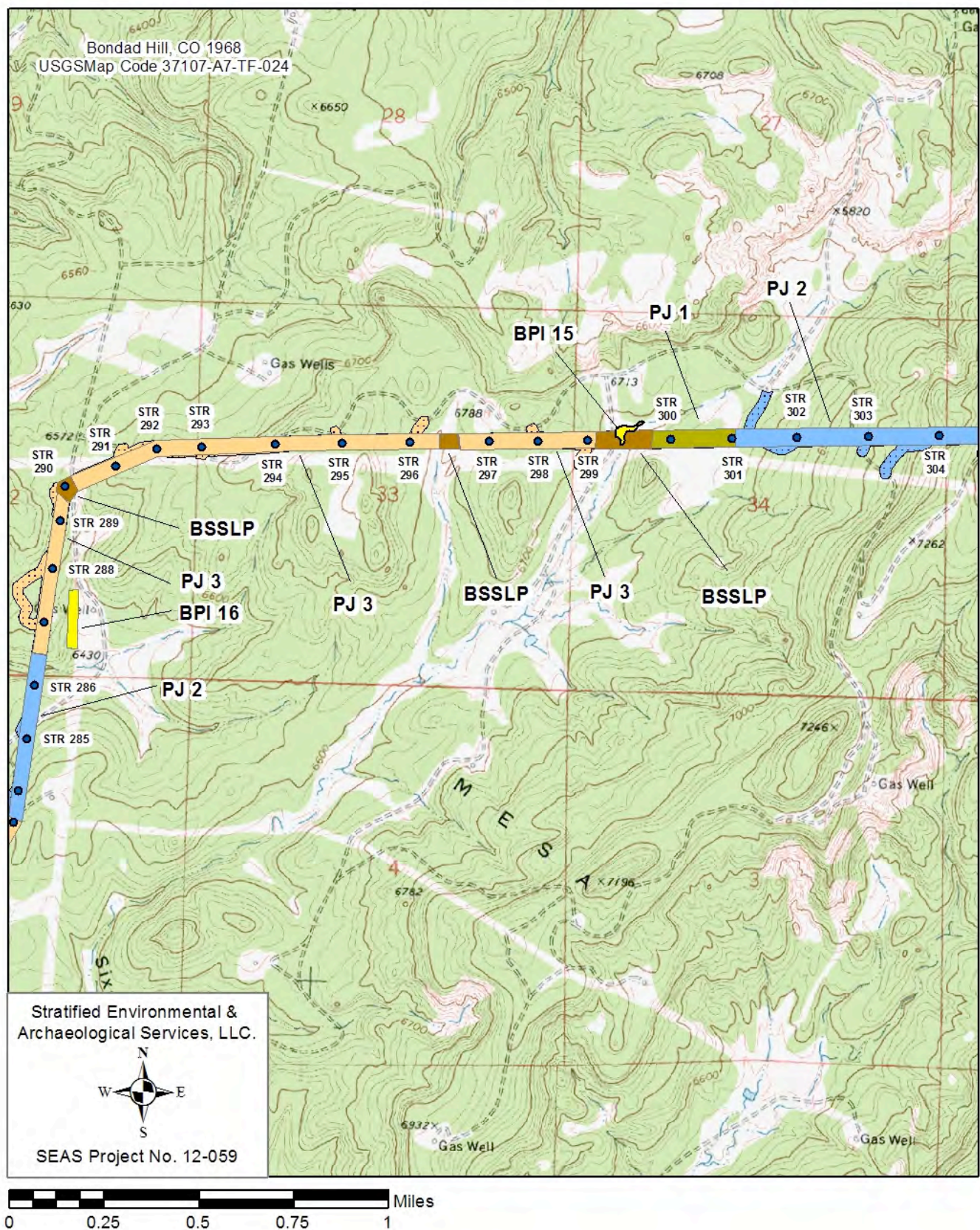
*BR for Tri-State Generation and Transmission's Proposed San Juan Basin Energy Connection Project on SUIR and Private Lands in La Plata County, CO  
SEAS 12-059 July 2013*





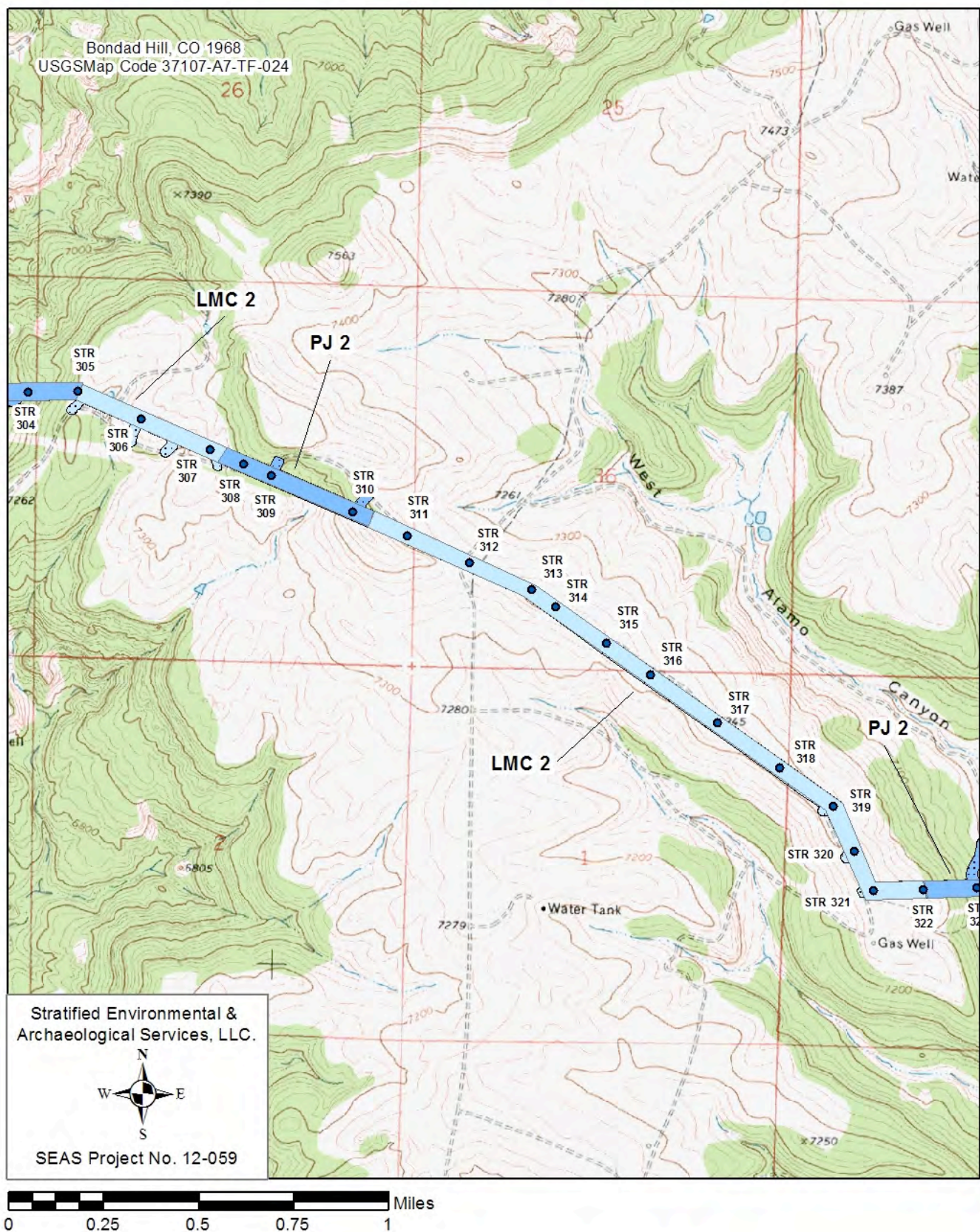
**Figure 4.4 Vegetation Map 2: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





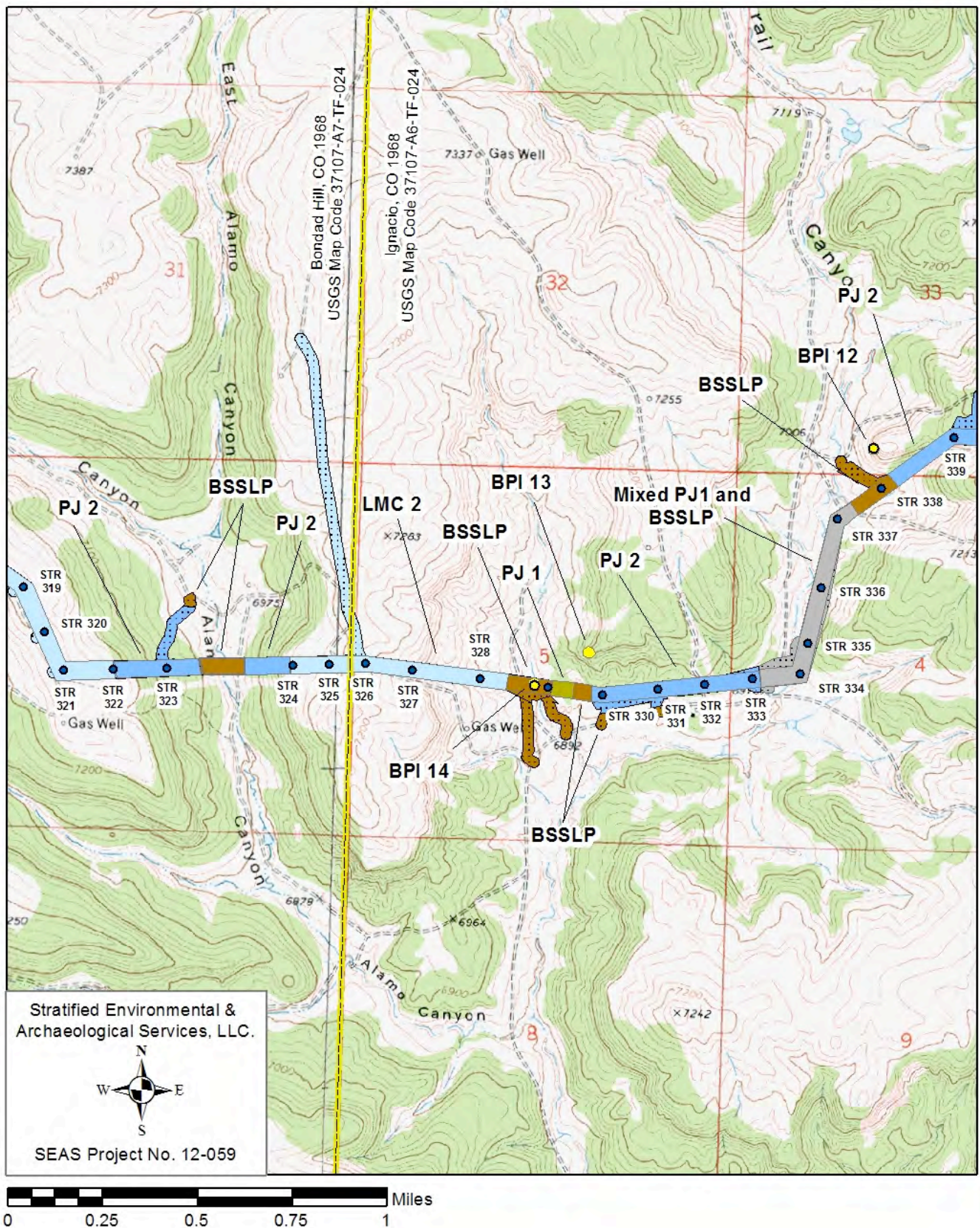
**Figure 4.5 Vegetation Map 3: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





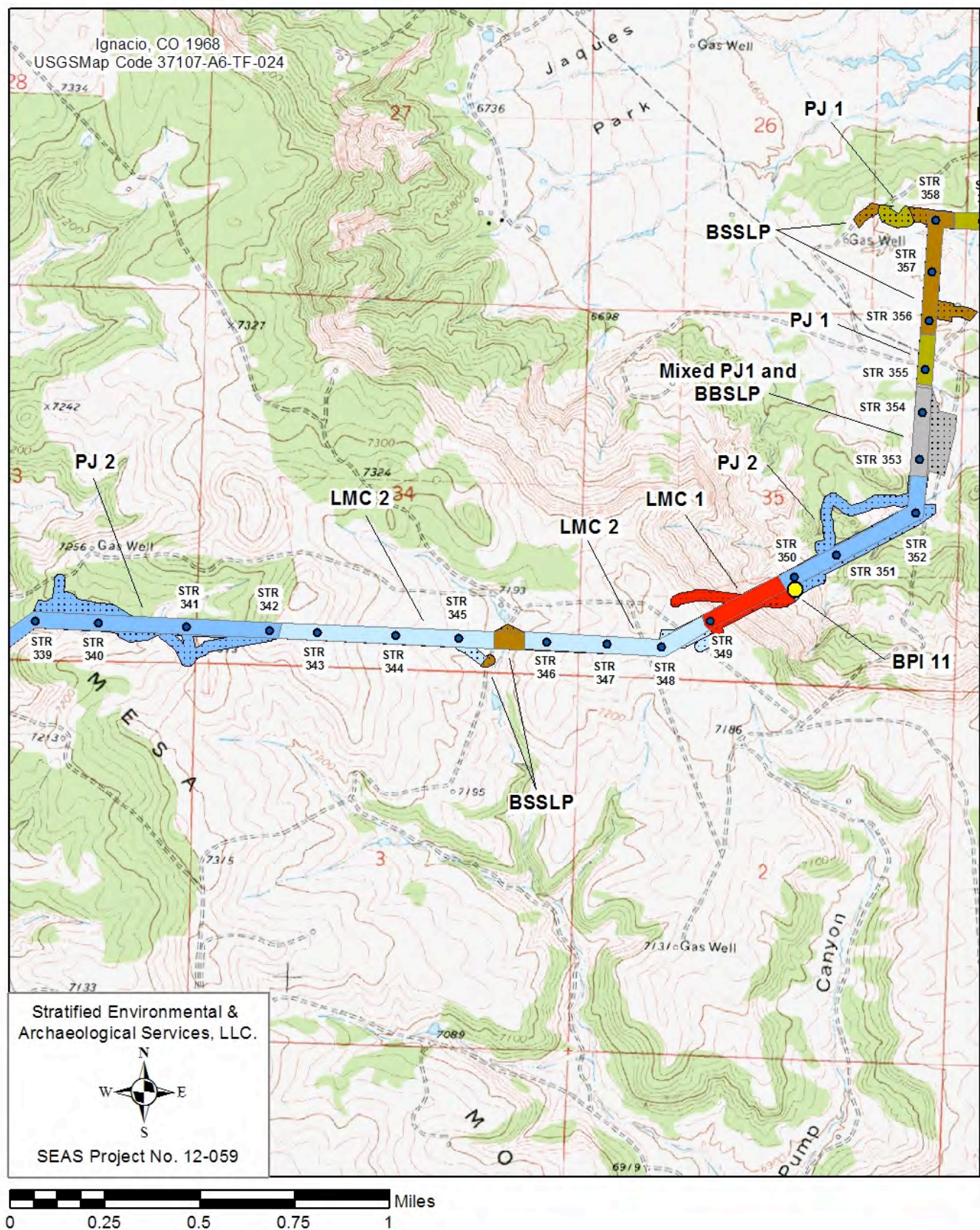
**Figure 4.6 Vegetation Map 4: Bondad Hill, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





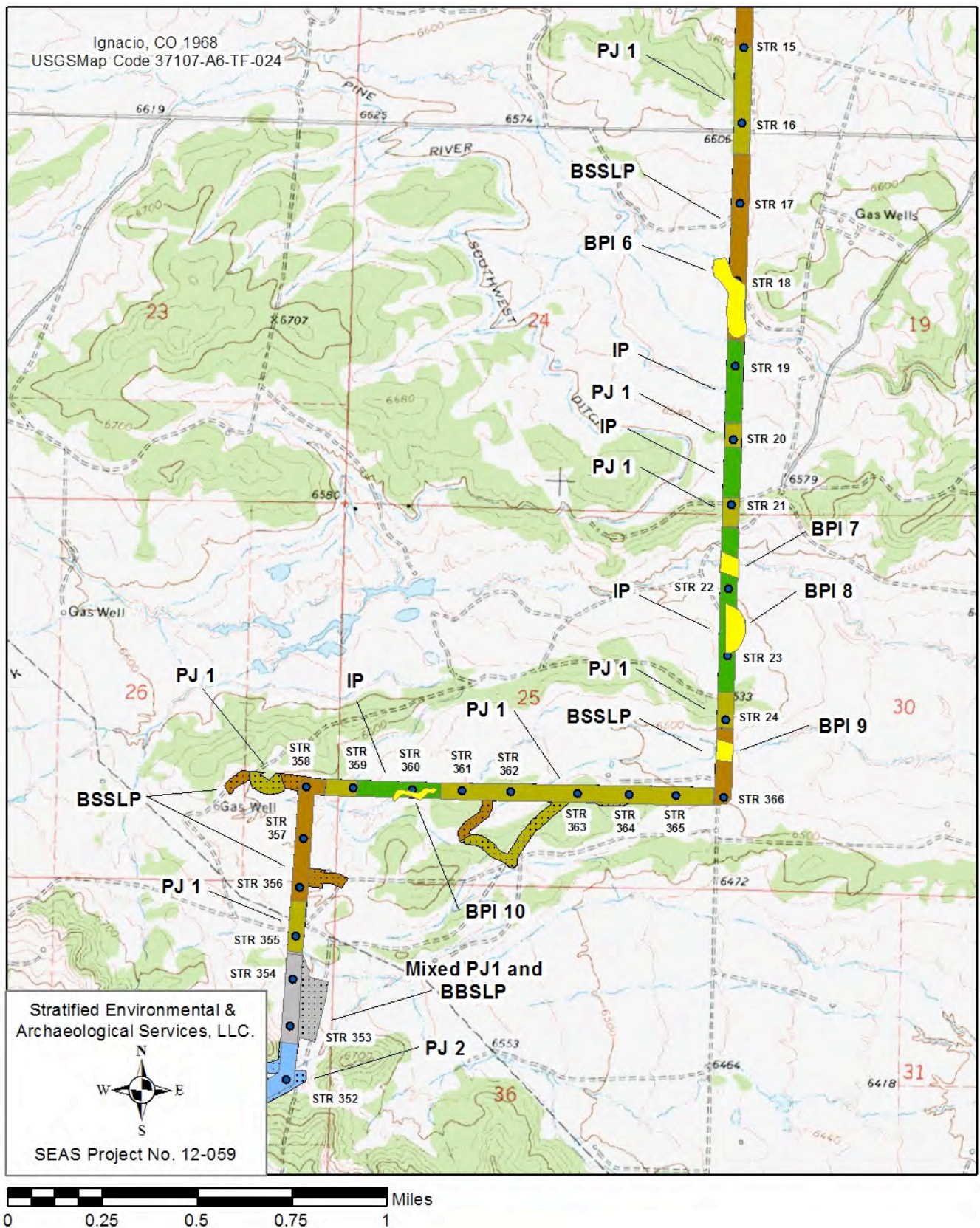
**Figure 4.7 Vegetation Map 5: Bondad Hill, CO 1968 and Ignacio, CO 1968 USGS 7.5' Series Quadrangles (1:24,000 Scale)**





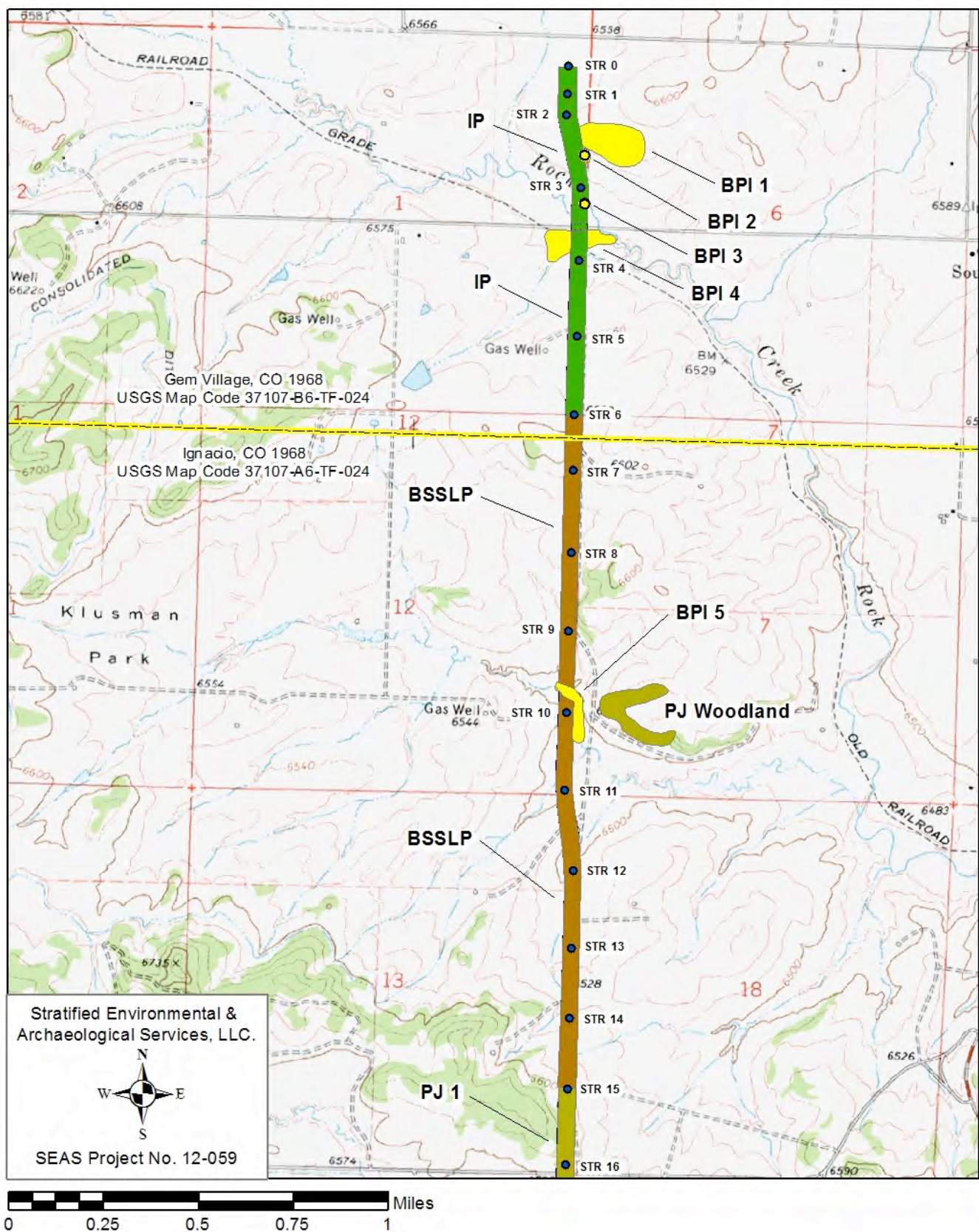
**Figure 4.8 Vegetation Map 6: Ignacio, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**





**Figure 4.9 Vegetation Map 7: Ignacio, CO 1968 USGS 7.5' Series Quadrangle (1:24,000 Scale)**









**Figure 4.11 View of Big Sagebrush Scrubland Vegetation (Top) and View of Piñon Pine-Juniper Woodland Aspect 3 (Bottom)**





**Figure 4.12 View of Lower Montane Chaparral Aspect 2 (Top) and View of Ponderosa Pine Woodland Type at BPI 16 Facing Northeast (Bottom)**

**Table 4.3 Plant Species Observed in the Project Area**

Scientific Name	Common Name
<b>Aceraceae (Maple Family)</b>	
<i>Negundo aceroides</i> Moench	Box elder
<b>Agavaceae (Agave Family)</b>	
<i>Yucca baccata</i> Torrey	Banana yucca
<i>Yucca harrimaniae</i> Trelease	Harriman's yucca
<b>Alismataceae (Water-Plantain Family)</b>	
<i>Sagittaria cuneata</i> Sheldon	Northern arrowhead
<b>Alliaceae (Onion Family)</b>	
<i>Allium acuminatum</i> Hook.	Acuminate onion
<i>Allium geyeri</i> Watson	Pink wild onion
<i>Allium macropetalum</i> Rydberg	Large flower onion
<i>Allium textile</i> Nels. & Macbr.	Textile onion
<b>Amaranthaceae (Amaranth Family)</b>	
<i>Amaranthus blitoides</i> Watson	Prostrate pigweed
<i>Amaranthus retroflexus</i> L.	Redroot Pigweed
<b>Anacardiaceae (Sumac Family)</b>	
<i>Rhus aromatica</i> Aiton <i>trilobata</i> (Nuttall) Gray	Skunkbrush
<b>Apiaceae (Parsley Family)</b>	
<i>Aletes sessiliflorus</i> Theobald & Tseng	Sessile-flowered false carrot
<i>Cymopterus acaulis</i> (Pursh) Rafinesque var. <i>fendleri</i> (Gray) Goodrich	Fendler's plains spring-parsley
<i>Cymopterus purpureus</i> Watson	Variable Spring parsley
<i>Oxypolis fendleri</i> (Gray) Heller	Cowbane
<i>Pastinaca sativa</i> L.z	Parsnip
<b>Apocynaceae (Dogbane Family)</b>	
<i>Apocynum cannabinum</i> L.	Indian hemp
<b>Asclepiadaceae (Milkweed Family)</b>	
<i>Asclepias asperula</i> (Decne.) Woodson	Spider milkweed
<i>Asclepias macrotis</i> Torrey	Longhorn milkweed
<i>Asclepias speciosa</i> Torrey	Showy milkweed
<i>Asclepias subsubverticillata</i> (Gray) Vail	Whorled/Poison milkweed
<b>Asteraceae (Aster Family)</b>	
<i>Achillea lanulosa</i> Nuttall	Yarrow
<i>Acroptilon repens</i> (L.) de Candolle	Russian knapweed
<i>Almutaster pauciflorus</i> (Nuttall) Love	Alkali marshaster
<i>Ambrosia acanthicarpa</i> Hooker	Bur ragweed
<i>Artemisia dracunculus</i> L.	Tarragon
<i>Artemisia frigida</i> Willdenow	Fringed sage, prairie sagewort
<i>Artemisia ludoviciana</i> Nuttall	Louisiana wormwood
<i>Artemisia novum</i> Nelson	Black sagebrush
<i>Artemisia tridentata</i> Nuttall	Big sagebrush
<i>Aster adscendens</i> Lindl.	Long-leaved aster
<i>Aster falcatus</i> Lindl. in Hook.	Heath/falcate aster
<i>Aster glaucodes</i> Blake	Blueleaf aster
<i>Aster hesperius</i> Gray	Hesperus aster
<i>Bahia dissecta</i> (Gray) Britt.	Cutleaf ragweed
<i>Brickellia californica</i> (Torrey & Gray) Gray	California brickellbush
<i>Brickellia grandiflora</i> (Hook.) Nuttall	Tasselflower
<i>Brickellia microphylla</i> (Nuttall) A. Gray var. <i>scabra</i> A. Gray	Rough brickellbush
<i>Carduus nutans</i> L.	Musk thistle
<i>Centaurea repens</i> L.	Russian knapweed
<i>Chaenactis douglasii</i> (Hooker) Hooker & Arnott	Dusty maiden



**Table 4.3 Flora of the Project Area (Continued)**

<i>Chaetopappa ericoides</i> (Torrey) Nesom	Rose heath/ Sand aster
<i>Chrysothamnus depressus</i> Nuttall	Dwarf rabbitbrush
<i>Chrysothamnus linifolius</i> Greene	Flax-leaved rabbitbrush
<i>Chrysothamnus nauseosus</i> (Pallus) Britton var. <i>graveolens</i> (Nuttall) Hall	Rubber rabbitbrush
<i>Cichorium intybus</i> L.	Chicory
<i>Cirsium arvense</i> (L.) Scopoli	Canada thistle
<i>Cirsium calcareum</i> (Jones) Wootton & Standley	Cainville thistle
<i>Conyza canadensis</i> (L.) Cronquist	Horseweed
<i>Crepis runcinata</i> (James) Torrey & Gray	Fiddleleaf hawksbeard
<i>Erigeron divergens</i> Torrey & Gray	Spreading fleabane
<i>Erigeron flagellaris</i> Gray	Trailing fleabane
<i>Eupatorium herbaceum</i> (Gray) Greene	White thoroughwort
<i>Grindelia fastigiata</i> Greene	Erect gumweed
<i>Grindelia squarrosa</i> (Pursh) Dunal	Gumweed
<i>Gutierrezia sarothrae</i> (Pursh) Britton & Rusby	Broom snakeweed
<i>Helianthus annuus</i> L.	Common sunflower
<i>Heterotheca villosa</i> (Pursh) Shinnery	Hairy goldenaster
<i>Hymenopappus filifolius</i> Hooker	Common hyalineherb
<i>Hymenoxys richardsonii</i> (Hooker) Cockerell	Richardson's bitterweed
<i>Lactuca serriola</i> L.	Prickly lettuce
<i>Machaeranthera canescens</i> (Pursh) Gray	Hoary aster
<i>Microseris linearifolia</i> (DC.) Sch.Bip.	Cutleaf vipergrass
<i>Onopordium acanthium</i> L.	Scotch thistle
<i>Packera neomexicana</i> (Gray) Weber & Love	New Mexico groundsel
<i>Petrodora pumila</i> (Nuttall) Greene var. <i>pumila</i>	Rock goldenrod
<i>Senecio multilobatus</i> Torrey & Gray	Uinta groundsel
<i>Senecio ridellii</i> Torrey & Gray	Riddell's groundsel
<i>Solidago missouriensis</i> Nuttall	Missouri goldenrod
<i>Solidago spathulata</i> DC	Mountain goldenrod
<i>Stenotus armeroides</i> Nuttall	Goldenweed
<i>Taraxacum officinale</i> Weber	Common dandelion
<i>Tetradymia canescens</i> de Candolle	Horsebrush
<i>Tetrameuris acaulis</i> (Pursh) Greene	Bitterweed
<i>Tetrameuris ivesiana</i> Greene	Ive's bitterweed
<i>Townsendia incana</i> Nuttall	Silvery townsendia
<i>Tragopogon dubius</i> (Scopoli) ssp <i>major</i> (Jacquinn) Vollmann	Western salsify
<i>Wyethia amplexicaulis</i> (Nuttall) Nuttall	Mule's ears
<i>Xanthium strumarium</i> L.	Cocklebur
<b>Berberidaceae (Barberry Family)</b>	
<i>Mahonia repens</i> (Lindley) Don	Creeping Oregon grape
<b>Boraginaceae (Borage Family)</b>	
<i>Cryptantha</i> sp.	Cryptantha
<i>Cryptantha bakeri</i> (Greene) Payson	Baker's cryptanth
<i>Cryptantha fulvocanescens</i> (S. Wats.) Payson	Yellow-hair cryptanth
<i>Cryptantha recurvata</i> Cov.	Recurved cryptanth
<i>Cynoglossum officinale</i> L.	Houndstongue
<i>Lappula redowskii</i> (Hornem.) Greene	Stickseed
<i>Lithospermum multiflorum</i> Torrey	Wayside gromwell
<i>Mertensia fusiformis</i> Greene	Spindle bluebell
<b>Brassicaceae (Mustard Family)</b>	
<i>Alyssum alyssoides</i>	Yellow alyssum
<i>Alyssum desertorum</i> Stapf	Desert alyssum

**Table 4.3 Flora of the Project Area (Continued)**

<i>Arabis holboellii</i> Hornem. var. <i>fendleri</i> Gray	Fendler rockcress
<i>Camelina microcarpa</i> Andr. Ex DC.	Smallseed falseflax
<i>Cardaria draba</i> (L.) Desvaux	Hoary cress
<i>Descurainia pinnata</i> (Walt.) Britton	Tansy mustard
<i>Descurainia sophia</i> (L.) Webb	Flixweed
<i>Draba cuneifolia</i> Nuttall ex Torrey and Gray	Wedgeleaf draba
<i>Erysimum capitatum</i> (Douglas) Greene	Western wallflower
<i>Lepidium perfoliatum</i> L.	Clasping peppergrass
<i>Lesquerella fendleri</i> (Gray) Watson	Fendler bladderpod
<i>Lesquerella rectipes</i> Wooton & Standley	Bladderpod
<i>Nasturtium officinale</i> R. Brown	Watercress
<i>Noccaea montana</i> (L.) Meyer	Wild candytuft
<i>Schoenocrambe linifolia</i> (Nuttall) Greene	Skelton mustard
<i>Sisymbrium altissimum</i> L.	Jim Hill mustard
<i>Stanleya pinnata</i> (Pursh) Britton	Prince's plume
<i>Streptanthella longirostris</i> (Watson) Rydberg	Longbeak, little twistflower
<b>Cactaceae (Cactus Family)</b>	
<i>Coryphantha vivipara</i> (Nuttall) Britton & Rose	Nuttall's pincushion/ nipple cactus
<i>Cylindropuntia whipplei</i> (Engelmann & Bigelow) Kunth	Whipple's cholla
<i>Echinocereus coccineus</i> Engelmann	Scarlet beehive cactus
<i>Echinocereus triglochidiatus</i> Engelmann	Claret cup cactus
<i>Opuntia fragilis</i> (Nuttall) Haworth var. <i>brachyarthra</i> (Engelmann & Bigelow) Coulter	Potato cactus
<i>Opuntia macrorhiza</i> Engelmann	Prickly pear
<i>Opuntia phaeacantha</i> Haworth	Engelmann prickly pear
<i>Opuntia polyacantha</i> Haworth	Plains prickly pear
<b>Caprifoliaceae (Honeysuckle Family)</b>	
<i>Symphoricarpos oreophilus</i> Gray	Mountain snowberry
<b>Calochortaceae (Mariposa Family)</b>	
<i>Calochortus nuttallii</i> Torrey & Gray	Sego lily
<b>Chenopodiaceae (Goosefoot Family)</b>	
<i>Atriplex canescens</i> (Pursh) Nuttall	Four-wing saltbush
<i>Chenopodium album</i> L.	Lambsquarters
<i>Chenopodium glaucum</i> L.	Goosefoot/ Lamb's quarter
<i>Chenopodium leptophyllum</i> (Moquin) Watson	Narrowleaf lamb's quarter
<i>Kochia scoparia</i> (L.) Schrader	Summer cypress
<i>Salsola australis</i> R. Brown	Prickly Russian thistle
<b>Convolvulaceae (Morning Glory Family)</b>	
<i>Convolvulus arvensis</i> L.	Bindweed
<b>Cupressaceae (Cypress Family)</b>	
<i>Juniperus osteosperma</i> (Torrey) Antoine	Utah juniper
<i>Juniperus scopulorum</i> (Sargent) Rydberg	Mountain juniper
<i>Juniperus scopulorum</i> x <i>J. osteosperma</i>	Hybrid juniper
<b>Cyperaceae (Sedge Family)</b>	
<i>Bolboschoenus maritimus</i> (L.) Palla ssp. <i>paludosus</i> (Nelson) Love & Love	Swelling bulrush
<i>Carex aquatilis</i> Wahlenburg	Water sedge
<i>Carex nebrascensis</i> Dewey	Nebraska sedge
<i>Carex nova</i> Bailey	Black-spiked sedge
<i>Carex vulpinoidea</i> Michx.	Fox sedge
<i>Carex</i> spp.	Sedge
<i>Eleocharis palustris</i>	Common spikerush
<i>Scirpus acutus</i> Muhl. Ex Bigelow	Hardstem bulrush
<i>Scirpus microcarpus</i> Presl.	Panicled bulrush



**Table 4.3 Flora of the Project Area (Continued)**

<i>Scirpus pungens</i> Vahl	American three-square
<i>Scirpus validus</i> Vahl.	Softstem bulrush
<b>Elaeagnaceae (Oleaster Family)</b>	
<i>Elaeagnus angustifolia</i> L.	Russian olive
<b>Ephedraceae (Ephedra Family)</b>	
<i>Ephedra viridis</i> Coville	Mormon tea
<b>Equisetaceae (Horsetail Family)</b>	
<i>Equisetum arvense</i> L.	Field horsetail
<i>Hippochaete</i> sp.	Scouring rush
<b>Euphorbiaceae (Spurge Family)</b>	
<i>Chamaesyce glyptosperma</i> (Engelmann) Small	Creeping fig, ridge-seeded spurge
<b>Fabaceae (Pea Family)</b>	
<i>Astragalus flavus</i> Nuttall ex T & G	White milkvetch
<i>Astragalus lonchocarpus</i> Torrey	Great rushy milkvetch
<i>Astragalus missouriensis</i> Nuttall	Missouri milkvetch
<i>Astragalus oocalycis</i> Jones	Arboles milkvetch
<i>Astragalus praelongus</i> Sheldon	Stinking milkvetch
<i>Glycyrrhiza lepidota</i> Pursh	Wild liquorice
<i>Lathyrus eucosmus</i> Butters & St. John	Wild peavine
<i>Lotus wrightii</i> (Gray) Greene	Deervetch/Wright's trefoil
<i>Lupinus argenteus</i> Pursh	Silvery lupine
<i>Lupinus caudatus</i> Kellogg	Spurred lupine
<i>Medicago lupulina</i> L.	Black medic
<i>Medicago sativa</i> L.	Alfalfa
<i>Melilotus alba</i> Desrousseaux	White sweetclover
<i>Melilotus officinalis</i> (L.) Lamarck	Yellow sweetclover
<i>Trifolium gymnocarpum</i> Nuttall	White dutch clover
<i>Trifolium pratense</i> L.	Red clover
<i>Trifolium repens</i> L.	White clover
<b>Fagaceae (Oak Family)</b>	
<i>Quercus gambelii</i> Nuttall	Gambel oak
<i>Quercus turbinella</i> Greene	Turbinella live oak
<i>Quercus turbinella</i> x <i>Q. gambelii</i>	Hybrid of Gambel and scrub live oak
<b>Geraniaceae (Geranium Family)</b>	
<i>Erodium cicutarium</i> (L.) L'Heritier	Crane's bill
<b>Hydrangeaceae (Hydrangea Family)</b>	
<i>Fendlera rupicola</i> Gray	Cliff fendlerbush
<b>Juncaceae (Rush Family)</b>	
<i>Juncus balticus</i> Willdenow	Baltic rush
<i>Juncus torreyi</i> Cov.	Torrey's rush
<b>Lamiaceae (Mint Family)</b>	
<i>Dracocephalum parviflorum</i> Nuttall	Common dragonhead
<i>Lycopus americanus</i> Muhlenberg	Water horehound/ Bugleweed
<i>Marrubium vulgare</i> L.	Horehound
<i>Mentha arvensis</i> L.	Mint
<b>Liliaceae (Lily Family)</b>	
<i>Zigadenus venenosus</i> Watson	Watson's death camas
<b>Malvaceae (Mallow Family)</b>	
<i>Malva neglecta</i> Wallroth	Common mallow
<i>Sphaeralcea coccinea</i> (Nuttall) Rydberg ssp. <i>dissecta</i> (Nuttall) Kearney	Scarlet globemallow
<b>Nyctaginaceae (Four-O'clock Family)</b>	
<i>Mirabilis multiflora</i> (Torrey) Gray	Many-flowered four o'clock

**Table 4.3 Flora of the Project Area (Continued)**

<b>Oleaceae Family (Olive Family)</b>	
<i>Forestiera pubescens</i> Nuttall	New Mexico olive
<b>Orobanchaceae (Broom-rape Family)</b>	
<i>Orobanche fasciculata</i> Nuttall	Broom-rape
<i>Orobanche multiflora</i> Nuttall	Many flowered broom-rape
<b>Pinaceae (Pine Family)</b>	
<i>Pinus edulis</i> Engelman	Colorado piñon pine
<i>Pinus ponderosa</i> Douglas	Ponderosa pine
<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas fir
<b>Plantaginaceae (Plantain Family)</b>	
<i>Plantago lanceolata</i> L.	English plantain
<i>Plantago major</i> L.	Broadleaf plantain
<b>Poaceae (Grass Family)</b>	
<i>Agropyron cristatum</i> (L.) Gaertner	Crested wheatgrass
<i>Agropyron desertorum</i> (Fisch.) Schult.	Desert crested wheatgrass
<i>Agrostis exarata</i> Trinius var. <i>minor</i> Hooker	Spike bentgrass
<i>Agrostis gigantea</i> Roth	Redtop bentgrass
<i>Aristida purpurea</i> Nuttall	New Mexico three-awn
<i>Blepharoneuron tricholepis</i> (Torrey) Nash	Pine dropseed
<i>Bouteloua barbata</i> Lag.	Six weeks grama
<i>Bouteloua gracilis</i> (Hum., Bonp. & Kunth) Lagasca	Blue grama
<i>Bromus inermis</i> Leyss.	Smooth brome
<i>Bromus japonicus</i>	Japanese brome
<i>Bromus tectorum</i> L.	Cheatgrass
<i>Dactylatus glomerata</i> L.	Orchardgrass
<i>Elymus canadensis</i> L.	Canada wild rye
<i>Elymus elymoides</i> (Raf.) Swezey	Bottlebrush squirreltail
<i>Elymus longifolius</i> (Smith) Gould	Squirreltail
<i>Elymus repens</i> (L.) Gould	Quackgrass, couchgrass
<i>Elymus smithii</i> (Rydborg) Gould	Bluestem wheatgrass
<i>Elymus trachycaulus</i> (Link) Gould	Roughstem wheatgrass
<i>Elymus triticoides</i> Buckley	Creeping wild-rye
<i>Hilaria jamesii</i> (Torrey) Benth	Galleta grass
<i>Hordeum jubatum</i> L.	Foxtail barley
<i>Koeleria macrantha</i> (Ledebour) Schultes	Junegrass
<i>Muhlenbergia asperifolia</i> (Nees & Meyen) Parodi	Meadow/alkali muhly
<i>Oryzopsis hymenoides</i> (Roem. & Schult.) Ricker	Indian ricegrass
<i>Phalaroides arundinacea</i> (L.) Rauschert	Reed canarygrass
<i>Phleum pratense</i> L.	Meadow timothy
<i>Poa fendleriana</i> (Steud.) Vasey	Mutton grass
<i>Poa palustris</i> L.	Swamp/ Fowl bluegrass
<i>Poa pratensis</i> L.	Kentucky bluegrass
<i>Polypogon monspeliensis</i> (L.) Desfontaines	Rabbitfoot grass
<i>Sporobolus cryptandrus</i> (Torrey) Gray	Sand dropseed
<i>Stipa comata</i> Trinius & Ruprecht	Needle and thread
<i>Stipa robusta</i> (Vasey) Scribn.	Sleepygrass
<b>Polemoniaceae (Phlox Family)</b>	
<i>Ipomopsis aggregata</i> (Pursh) Grant	Scarlet gilia
<i>Leptodactylon pungens</i> Torrey Nuttall	Prickly gilia
<i>Phlox hoodii</i> Richardson	Hood's phlox
<i>Phlox longifolia</i> Nuttall	Long-leaved phlox
<b>Polygonaceae (Buckwheat Family)</b>	
<i>Eriogonum alatum</i> Torrey	Winged buckwheat
<i>Eriogonum jamesii</i> Benth	James buckwheat



**Table 4.3 Flora of the Project Area (Continued)**

<i>Eriogonum lonchophyllum</i> Torrey & Gray var. <i>nudicaule</i>	Longleaf buckwheat
<i>Eriogonum microthecum</i> Nuttall var. <i>simpsonii</i> (Bentham) Reveal	Slender buckwheat
<i>Eriogonum racemosum</i> Nuttall	Redroot buckwheat
<i>Polygonum arenastrum</i> Bourgeau	Devil's shoestring
<i>Rumex crispus</i> L.	Curly dock
<b>Portulacaceae (Purslane Family)</b>	
<i>Portulaca oleraceae</i> L.	Common purslane
<b>Ranunculaceae (Buttercup Family)</b>	
<i>Clematis hirsutissima</i> Pursh	Leatherflower
<i>Clematis ligusticifolia</i> Nuttall	Western virgin's bower
<i>Delphinium nuttallianum</i> Pritz.	Nuttall's larkspur
<i>Halerpestes cymbalaria</i> (Pursh) ssp. <i>saximontana</i> (Fernald) Moldenke	Alkali crowfoot/alkali buttercup
<b>Rosaceae (Rose Family)</b>	
<i>Amelanchier alnifolia</i> Nuttall	Alder-leaved serviceberry
<i>Amelanchier utahensis</i> Koehne	Utah serviceberry
<i>Cercocarpus montanus</i> Rafinesque	Mountain mahogany
<i>Padus virginiana</i> (L.) Miller ssp. <i>melanocarpa</i> (Nelson) Weber	Chokecherry
<i>Peraphyllum ramosissimum</i> Nuttall	Branched apple
<i>Purshia tridentata</i> (Pursh) de Candolle	Bitterbrush
<i>Rosa woodsii</i> Lindley	Wood's rose
<b>Salicaceae (Willow Family)</b>	
<i>Populus angustifolia</i> James	Narrow-leaf cottonwood
<i>Salix exigua</i> Nuttall	Sandbar willow
<b>Santalaceae (Sandalwood Family)</b>	
<i>Comandra umbellata</i> (L.) Nuttall	Bastard toadflax
<b>Scrophulariaceae (Figwort Family)</b>	
<i>Castilleja chromosa</i> Nelson	Desert paintbrush
<i>Castilleja linariifolia</i> Bentham	Linaria paintbrush
<i>Cordylanthus wrightii</i> Gray	Club flower
<i>Orthocarpus purpureoalbus</i> Gray	Purple owllover
<i>Pedicularis centranthera</i> Gray	Prickle lousewort
<i>Penstemon lentus</i> Pennell var. <i>lentus</i>	Abajo penstemon
<i>Penstemon linarioides</i> Gray ssp. <i>coloradoensis</i> (A. Nels.) Keck	Linaria penstemon
<i>Penstemon strictus</i> Bentham	Rocky Mountain penstemon
<i>Verbascum thapsus</i> L.	Mullein
<b>Tamaricaceae (Tamarisk Family)</b>	
<i>Tamarix ramosissima</i> Ledebour	Tamarisk/ Salt cedar
<b>Typhaceae (Cattail Family)</b>	
<i>Typha latifolia</i> L.	Broad-leaved cattail
<b>Ulmaceae (Elm Family)</b>	
<i>Ulmus pumila</i> L.	Chinese elm
<b>Verbenaceae (Vervain Family)</b>	
<i>Verbena bracteata</i> Lagasca & Rodriguez	Prostrate verbena
<b>Zygophyllaceae (Caltrop Family)</b>	
<i>Tribulis terrestris</i> L.	Puncturevine

often with rubber rabbitbrush (*Chrysothamnus nauseosus* var. *graveolens*) or four-wing saltbush (*Atriplex canescens*) as sub-dominant. The character of the understory varies considerably and appears to be influenced mainly by landscape position, aspect, soil depth and type, and past disturbances. The understory is predominantly composed of bluestem wheatgrass (*Elymus smithii*), blue grama (*Bouteloua gracilis*), galleta (*Hilaria jamesii*), erect gumweed (*Grindelia fastigiata*), cheatgrass (*Bromus tectorum*), fringed sage (*Artemisia frigida*), broom snakeweed (*Gutierrezia sarothrae*), yellow alyssum (*Alyssum alyssoides*), and Richardson's bitterweed (*Hymenoxys richardsonii*). Common, but usually less dominant, plant species include desert crested wheatgrass (*Agropyron desertorum*), white milkvetch (*Astragalus flavus*), long-leaved phlox (*Phlox longifolia*), Fendler's spring parsley (*Cymopterus acaulis* var. *fendleri*), sand aster (*Chaetopappa ericoides*), variable parsley (*Cymopterus purpureus*), tansy mustard (*Descurainia pinnata*), Indian ricegrass (*Oryzopsis hymenoides*), Watson's death camas (*Zigadenus venenosus*), wild onion (*Allium macropetalum*), spreading fleabane (*Erigeron divergens*), and smooth brome (*Bromus inermis*). Scattered saplings and small trees of Colorado piñon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and Rocky Mountain juniper (*Juniperus scopulorum*) often occur within the association in transitional areas, such as upper and medial slopes of hills and ridges where soils become more shallow.

#### **4.1.2 Mixed Conifer Woodland**

Mixed conifer woodlands generally occur on shallow residual and colluvial soils of slopes and ridges. Vegetation cover ranges considerably, from 30 to 65 percent and cryptogamic soil crusts are often present. For piñon pine-juniper woodlands, Colorado piñon pine tends to be the more dominant tree species in mesic settings, such as north and east-facing slopes, whereas Utah juniper favors more xeric settings, such as south and west-facing slopes where evapotranspiration rates are much higher. Four major aspects of mixed conifer woodland habitat were identified.

##### **4.1.2.1 Piñon Pine-Juniper Woodland, Aspect 1 (PJ 1)**

This xeric aspect generally occurs on cobbly loam soils and the overstory is dominated by Colorado piñon pine and Utah juniper (Figures 4.2 to 4.4 and 4.7 to 4.9). Less often, Rocky Mountain juniper and hybrids (*J. osteosperma* x *J. scopulorum*) can be major components of the overstory. The understory is dominated by big sagebrush and/or black sagebrush (*Artemisia novum*) and usually somewhat grassy, occurring on mixed but deep alluvial or outwash soils. Common species include galleta, Indian ricegrass, blue grama, cheatgrass, muttongrass (*Poa fendleriana*), Junegrass (*Koeleria macrantha*), Richardson's bitterweed, broom snakeweed, plains prickly pear (*Opuntia polyacantha*), yellow alyssum, Engelmann prickly pear (*Opuntia phaeacantha*), Nuttall's pincushion cactus (*Coryphantha vivipara*), scarlet globemallow (*Sphaeralcea coccinea* ssp. *dissecta*), erect gumweed, Fendler's spring parsley, long-leaved phlox, variable spring parsley, fringed sage, and redroot buckwheat (*Eriogonum racemosum*).

##### **4.1.2.2 Piñon Pine-Juniper Woodland, Aspect 2 (PJ 2)**

This aspect usually occurs on steep north to east-facing slopes and is characterized by closely spaced and often interlocking crowns of Colorado piñon pine and Utah and/or Rocky Mountain juniper trees with a dense understory dominated by thicket-forming, lower montane chaparral shrubs (Figures 4.2 to 4.7). The dominant shrubs include Gambel oak (*Quercus gambelii*), mountain mahogany (*Cercocarpus montanus*), cliff fendlerbush (*Fendlera rupicola*), Utah serviceberry (*Amelanchier utahensis*), and branched apple (*Peraphyllum ramosissimum*). Occasional ponderosa pine (*Pinus ponderosa*) trees can occur as well. Other common and dominant species in the understory include mountain snowberry (*Symphoricarpos oreophilus*), dwarf rabbitbrush (*Chrysothamnus depressus*), Ive's bitterweed



(*Tetrandeum ivesiana*), black sagebrush, variable parsley, rock goldenrod (*Petrophila pumila*), spurred lupine (*Lupinus caudatus*), wallflower (*Erysimum capitatum*), linaria penstemon (*Penstemon linarioides* ssp. *coloradoensis*), James buckwheat (*Eriogonum jamesii*), meadow sage (*Artemisia ludoviciana*), skunkbrush (*Rhus trilobata*), silver lupine (*Lupinus argenteus*), Uinta groundsel (*Senecio multilobatus*), bastard toadflax (*Comandra umbellata*), scarlet gilia (*Ipomopsis aggregata*), creeping Oregon grape (*Mahonia repens*), purple hoary aster (*Machaeranthera canescens*), and winged buckwheat (*Eriogonum alatum*).

#### **4.1.2.3 Piñon Pine-Juniper Woodland, Aspect 3 (PJ 3)**

This xeric aspect consists of spaced mature to old growth Colorado piñon pine and Utah juniper and is intermediate between the two above aspects, but is far more common (Figures 4.2 to 4.4, and 4.10). It occurs on mesas and south to west-facing slopes, usually on relatively thin residual to colluvial soils. The understory is not usually dense and is often more diverse, varying considerably based on soils, aspects, and slope. The understory is comprised of mixed scrubs and shrubs, such as antelope bitterbrush, Mormon tea (*Ephedra viridis*), banana yucca (*Yucca baccata*), and mountain mahogany. Common grasses and forbs include James buckwheat (*Eriogonum jamesii*), goldenweed (*Stenotus armerioides*), purple lousewort (*Pedicularis centranthera*), Indian ricegrass, Uinta groundsel, stemless bitterweed, Indian ricegrass, plains prickly pear, white hiddenflower (*Cryptantha fulvocanescens*), prickly gila (*Leptodactylon pungens*), silver Easter daisy (*Townsendia incana*), hairy goldenaster (*Heterotheca villosa*), and dusty maiden (*Chaenactis douglasii*). Some localized areas of Nacimiento Formation soils occur on the west slope of the Mesa Mountains, where the understory takes on a different more sparse character, including species such as slenderleaf buckwheat (*Eriogonum microthecum* var. *simpsonii*), common hyalineherb (*Hymenopappus filifolius*), white milkvetch (*Astragalus flavus* var. *flavus*), Harriman's yucca (*Yucca harrimaniae*), longbeak (*Streptanthella longirostris*), Fendler bladderpod (*Lesquerella fendleri*), muttongrass, rock goldenrod, antelope bitterbrush, and Utah serviceberry.

#### **4.1.2.4 Ponderosa Pine Woodland (BPI 16)**

Ponderosa pine woodland habitat occurs in an upper side canyon of Little Cow Canyon (BPI 16) and the proposed easement was eventually shifted to avoid it (Figures 4.4 and 4.11). The overstory of this mixed conifer woodland type is primarily ponderosa pine, with Rocky Mountain juniper, Colorado piñon pine, and one Douglas fir (*Pseudotsuga menziesii*) tree as sub-dominants. There are other areas in the action area with occasional ponderosa pine and Douglas fir trees along the easement, but they generally only in groups of two to three individuals. Outside of the easement, patches of ponderosa pine woodland habitat often occur at the heads of canyons in the Mesa Mountains, at higher elevations. The woodland understory is composed of Gambel oak thickets, antelope bitterbrush, muttongrass, meadow sage, hairy goldenaster, California brickellbush (*Brickellia californica*), James buckwheat, wild peavine (*Lathyrus eucosmus*), and skunkbrush. Ponderosa pine seedlings and saplings are conspicuously lacking and given the age structure of the stand, conditions suitable for seedling germination likely only occur once every several decades.

### **4.1.3 Lower Montane Chaparral**

Lower montane chaparral is found only in the Mesa Mountains portion of the project. Two aspects of this community type occur.

#### **4.1.3.1 Lower Montane Chaparral, Aspect 1 (LMC 1)**

This aspect occurs on steep north and east-facing slopes where snow pack lingers for longer periods (Figure 4.7). The soils are colluvial and often coarse with abundant rock and gravel inclusions. Nearly impenetrable thickets of lower montane shrubs form with few openings and understory herbaceous species are few and suppressed. As with Aspect 2, Aspect 1 is maintained by periodic wildfire events. Most of the shrubs regenerate readily after fire, while the conifer trees that have become established are usually decimated, and their regeneration is much slower and dependent on a host of stochastic elements affecting seed dispersal. The primary chaparral shrubs include dense Gambel oak, mountain mahogany, cliff fendlerbush, Utah serviceberry, skunkbrush, and branched crabapple thickets. Common understory species include most of those described below for Aspect 2, but with far less prevalent growth.

#### **4.1.3.2 Lower Montane Chaparral, Aspect 2 (LMC 2)**

This aspect occurs along the crest of the Mesa Mountains on glacial outwash soils subject to colluvial mixing (Figures 4.5 to 4.7, and 4.11). The chaparral is characterized by spaced Gambel oak thickets with openings of low black sagebrush, grasses, and forbs. Sub-dominant shrubs include mountain mahogany, antelope bitterbrush, Utah serviceberry, cliff fendlerbush, and branched apple. The understory can vary considerably, but usually includes muttongrass, mules ear (*Wyethia amplexicaulis*), crested wheatgrass (*Agropyron cristatum*), Ive's bitterweed, goldenweed, rock goldenrod, creeping Oregon grape, trailing fleabane (*Erigeron flagellaris*), long-leaved aster (*Aster adscendens*), linaria penstemon, scarlet globemallow, fringed sage, redroot buckwheat, sand aster, winged buckwheat, smooth brome, Indian ricegrass, *Penstemon* sp., Richardson's bitterweed, dwarf rabbitbrush, mountain snowberry (*Symphoricarpos oreophilus*), deervetch (*Lotus wrightii*), both spurred and silvery lupine (*Lupinus caudatus* and *L. argenteus*), Nuttall's larkspur (*Delphinium nuttallianum*), spindle bluebells (*Mertensia fusiformis*), and wild peavine.

#### **4.1.4 Irrigated Pasture (IP)**

Irrigated pasture vegetation is dense and usually covers 95 to 100 percent of the ground surface (Figures 4.2, 4.8, and 4.9). In well-drained areas, cultivated pasture species, such as smooth brome (*Bromus inermis*), orchard grass (*Dactylatus glomerata*), alfalfa (*Medicago sativa*), and meadow timothy (*Phleum pratense*) tend to dominate. Other dominant species, particularly in saturated zones, include spike bentgrass (*Agrostis exarata*), Baltic rush (*Juncus balticus*), reed canarygrass (*Phalaroides arundinacea*), English plantain (*Plantago lanceolata*), and quackgrass (*Elymus repens*). Common and sometimes dominant plant species can include foxtail barley (*Hordeum jubatum*), meadow muhly (*Muhlenbergia asperifolia*), Kentucky bluegrass (*Poa pratensis*), common spikerush (*Eliocharis palustris*), and white dutch clover (*Trifolium gymnocarpum*).

#### **4.1.5 Emergent Wetland (BPI's 3-7, 9, and 10)**

This community type is primarily restricted to drainages and depressions receiving irrigation runoff, and along Klusman Park Creek (Figures 4.8 and 4.9). Dominant plant species in the emergent wetlands include broadleaf cattail (*Typha latifolia*), water sedge (*Carex aquatilis*), field mint (*Mentha arvensis*), fox sedge (*Carex vulpinoidea*), Baltic rush, common three-square (*Scirpus pungens*), common spikerush, panicked bulrush (*Scirpus microcarpus*), reed canarygrass, and meadow timothy. Many of the dominants form nearly monotypic stands or zones, particularly broadleaf cattail, common spikerush, water sedge, and Baltic rush. A variety of species often occur as a fringe around the wetlands, such as smooth brome,

heath aster (*Aster falcatus*), Canada thistle (*Cirsium arvense*), sweetclover (*Melilotus* spp.), and beautiful milkweed (*Asclepias speciosa*).

Regardless of the ultimate water source, these wetland communities serve a variety of ecosystem functions, including short-term storage of surface water following major precipitation and flooding events, replenishment of soil moisture, increased groundwater infiltration, facilitation of aquatic food web materials, dissipation of energy, reduction of downstream peak discharge, water quality maintenance and improvement, nutrient cycling and storage, reduction of downstream particulate loading, and moderation of surface water temperatures. The wetland zones and enhanced creeks also serve as a sanctuary and conduit for biodiversity within a complex, anthropogenic landscape where habitats are highly fragmented.

#### **4.1.6 Riparian Shrubland (BPI 15)**

This community occurs only in one locale along the proposed easement in the upper Sixshooter Canyon watershed (BPI 15) (Figure 4.4). The riparian shrubland is supported by sandy alluvial soils of a wash bottom, where a dense thicket of sandbar willow (*Salix exigua*) has formed. The stand occurs in a braided channel area. The willow are 8-12 ft high and the stand varies from 10 to 60 ft wide. Much of the willow is dead, possibly due to harsh summer drought conditions in 2011 and 2012. The understory is dominated by smooth brome and the perimeter is fringed with heath aster, foxtail barley, and cocklebur (*Xanthium strumarium*). Groundwater must be close to the surface for this hydrophytic vegetation to have formed, which is probably an isolated, subsurface hydrology catchment or seep.

#### **4.1.7 Riparian Gallery Forest (CWGF; BPI 20)**

Riparian gallery forest habitat is only present within the study area on the east side of the Animas River crossing coinciding with alluvial floodplain deposits (BPI 20) (Figure 4.2). The canopy is composed exclusively of narrowleaf cottonwood (*Populus angustifolia*). The sub-canopy is occupied by box elder (*Negundo aceroides*) trees. The shrub layer is comprised of dense thickets of skunkbrush, sandbar willow, New Mexico olive (*Forestiera pubescens*), Wood's rose (*Rosa woodsii*), and chokecherry (*Padus virginiana* ssp. *melanocarpa*), with sparse spike bentgrass on the forest floor. Dense vines of Virgin's bower (*Clematis ligusticifolia*) cover much of the understory vegetation. Other less frequent species include Japan brome (*Bromus japonicus*), flax-leaved rabbitbrush (*Chrysothamnus linifolius*), Russian olive (*Elaeagnus angustifolia*), Western salsify (*Tragopogon dubius* ssp. *major*), and mullein (*Verbascum thapsus*).

### **4.2 Wildlife**

Mammal species observed in the vicinity of the project area, or inferred from evidence (e.g., tracks, scrapes, feces, or vocalizations), consist of mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus elaphus* ssp. *nelsoni*), American black bear (*Ursus americanus*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), muskrat (*Ondatra zibethicus*), striped skunk (*Mephitis mephitis*), rock squirrel (*Spermophilus variegatus*), Mexican woodrat (*Neotoma mexicana*), common racoon (*Procyon lotor*), Colorado chipmunk (*Tamias quadrivittatus*), and least chipmunk (*Eutamias minimus*). Two areas with active Gunnison's prairie dog (*Cynomys gunnisoni*) burrows were identified as well (BPI's 7 and 8). The project crosses both winter range and year-round range for mule deer and elk on the SUIR (EES 2009: Map 3-5). A set of adult mountain lion (*Felis concolor*) tracks was observed in the Mesa Mountains within the Pump Canyon watershed. Several other



mammal species likely inhabit the project area, particularly rodents, but simply were not observed during the daytime surveys.

Reptiles observed include the Great Basin gopher snake (*Pituophis cantifer* ssp. *deserticola*), the Western terrestrial garter snake (*Thamnophis elegans*), coachwhip (*Mastic flagellum*), and the Western rattlesnake (*Crotalus viridis*). Five lizard species, the sagebrush lizard (*Sceloporus graciosus*), lesser earless lizard (*Holbrookia maculata*), plateau/prairie lizard (*Sceloporus undulatus*), plateau striped whiptail (*Cnemidophorus velox*), and the short-horned lizard (*Phrynosoma hernandesi*) were observed in the project vicinity, all of which were frequently encountered in scrubland and woodland habitats, with the exception of the lesser earless lizard. Amphibians were observed only in the northern portion of the project along Klusman Park Creek and the various irrigation runoff induced wetlands. Confirmed amphibian species include the Western chorus frog (*Pseudacris triseriata*), bullfrog (*Rana catesbeiana*), and the Woodhouse toad (*Bufo woodhousii*).

Fifty-two bird species were identified within the project area and buffer (Table 4.4). The vast majority of bird species were found in woodland habitats. Mourning doves were abundant and found throughout the project area. The most frequently encountered woodland species include the Western scrub jay (*Aphelocoma californica*), juniper titmouse (*Parus inornatus*), white breasted nuthatch (*Sitta carolinensis*), lesser goldfinch (*Carduelis tristis*), American robin (*Turdus migratorius*), Northern flicker (*Colaptes auratus*), various warblers, and the black-capped chickadee (*Poecile atricapilla*), all of which are assumed to be breeding within the project area. Active nests of the blue-gray gnatcatcher, common nighthawk, and mourning dove were encountered during the surveys. By late September/early October, species that typically nest in the mountains during summer, but winter in the foothills and mesa/canyon country, were found throughout the various woodland habitats of the project in abundance, particularly the Townsend's solitaire (*Myadestes townsendii*), dark-eyed junco (*Junco hyemalis*), and pine siskin (*Carduelis pinus*).

Red-tailed hawks (*Buteo jamaicensis*) were observed on several occasions throughout the project corridor, although no nest sites were identified. Northern harrier hawks (*Circus cyaneus*) were seen in the open country of the Rock Creek vicinity numerous times, as well as in a cottonwood gallery forest along the Animas River twice. Red-winged blackbirds (*Agelaius phoeniceus*), the great blue heron (*Ardea herodias*), and mallards (*Anas platyrhynchos*) were only observed in wetland zones on the north side of the project area. Similarly, the Western meadowlark (*Strunella neglecta*), Western kingbird (*Tyrannus verticalis*), mountain bluebird (*Sialia currucoides*), and killdeer (*Charadrius montanus*) were found almost exclusively in the vicinity and edges of irrigated pasturelands and open wetlands. Thirty of the 52 bird species identified during the biological surveys exhibited territorial or other behavior that suggested they were breeding within the project area.

### 4.3 Biological Points of Interest (BPI)

A total of 21 BPI's were observed and documented during the biological field surveys. The BPI's include noxious weed infestations, water/wetland crossings, potentially suitable or occupied habitat for rare plants, disjunct plant species populations, riparian forest habitat, and other areas with MBTA concerns within or immediately adjacent to the proposed easement. A brief description of each BPI is provided in Table 4.5 (see Figures 4.12 to 4.19).

**Table 4.4 Bird Species Observed in the Project Area**

Common Name	Scientific Name
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch*	<i>Carduelis lawrencei</i>
American kestrel	<i>Falco sparverius</i>
American robin*	<i>Turdus migratorius</i>
Black-billed magpie*	<i>Pica hudsonia</i>
Black-capped chickadee*	<i>Poecile atricapilla</i>
Black-chinned hummingbird*	<i>Archilochus alexandri</i>
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Blue-gray gnatcatcher*	<i>Poliophtila caerulea</i>
Brewer's blackbird*	<i>Euphagus cyanocephalus</i>
Bushtit	<i>Psaltirparus minimus</i>
Canada goose	<i>Branta canadensis</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
Chipping sparrow*	<i>Spizella passerina</i>
Cliff swallow	<i>Petrochelidon pyrrhonota</i>
Common nighthawk*	Common nighthawk
Common raven	<i>Corvus corax</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Great blue heron	<i>Ardea herodias</i>
House finch	<i>Carpodacus mexicanus</i>
House wren	<i>Troglodytes aedon</i>
Juniper titmouse*	<i>Parus inornatus</i>
Killdeer*	<i>Charadrius montanus</i>
Lesser goldfinch*	<i>Carduelis tristis</i>
Mallard*	<i>Anas platyrhynchos</i>
Mountain bluebird*	<i>Sialia currucoides</i>
Mourning dove*	<i>Zenaida macroura</i>
Northern flicker*	<i>Colaptes auratus</i>
Northern harrier hawk*	<i>Circus cyaneus</i>
Northern mockingbird*	<i>Mimis polyglottos</i>
Orange-crowned warbler*	<i>Vermivora celata</i>
Pine siskin	<i>Carduelis pinus</i>
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Red-naped sapsucker	<i>Sphyrapicus nuchalis</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird*	<i>Agelaius phoeniceus</i>
Rock dove	<i>Columba livia</i>
Rock wren*	<i>Salpinctes obsoletus</i>
Say's phoebe*	<i>Sayornis saya</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Spotted towhee*	<i>Pipilo maculatus</i>
Stellar's jay	<i>Cyanocitta stelleri</i>
Townsend's solitaire	<i>Myadestes townsendii</i>
Turkey vulture	<i>Cathartes aura</i>
Violet-green swallow	<i>Tachycineta thalassina</i>
Virginia's warbler*	<i>Vermivora virginiae</i>
Western bluebird*	<i>Sialia mexicana</i>
Western kingbird*	<i>Tyrannus verticalis</i>
Western meadowlark*	<i>Strunella neglecta</i>
Western scrub jay*	<i>Aphelocoma californica</i>
White-breasted nuthatch*	<i>Sitta carolinensis</i>
Yellow-rumped warbler*	<i>Dendroica coronata</i>

\* = Behavior or other evidence indicated species is breeding and nesting within project area

**Table 4.5 Biological Points of Interests (BPI)**

<b>BPI#</b>	<b>Centerpoint UTM Coordinates (Zone 13, NAD 83)</b>	<b>Description</b>
BPI 1	N 4113323 m, E 263797 m	The BPI is a small rocky ridge of San Jose Formation sandstone with P-J woodland vegetation between irrigated pasturelands (Figure 4.9). Multiple sightings of Northern harrier hawk pair in spring, summer, and fall. Nest not located given surrounding private lands, but pair is often seen roosting on trees and ledges of ridge, often landing out of view in cattail marsh at BPI 4.
BPI 2	N 4113254 m, E 263770 m	20 by 10 m dense outbreak of Canadian thistle in buried irrigation pipe disturbance zone (Figure 4.9).
BPI 3	N 4113051 m, E 263770 m	Rock Creek crossing through proposed easement with fringe riparian vegetation lining steep, entrenched banks, dominated by reed canarygrass, meadow timothy, bentgrass, wild licorice, English plantain (Figure 4.9). Several disturbed pipeline easements cross Rock Creek within the proposed Tri-State easement. There is no TES habitat along creek. The creek is much enhanced by irrigation runoff, but project will not impact creek or riparian fringe vegetation. URS identified as a Water of the US
BPI 4	N 4112873 m, E 263731 m	Large, irrigation runoff induced long-leaved cattail marsh on S-side of county road (Figures 4.9 and 4.12). Project will not impact the wetland, although Northern harrier hawk pair affiliated with BPI 1 apparently utilizes this marsh frequently. The marsh is a major red-wing blackbird nesting colony in late spring/summer as well. Other hydrophytic species include American three-square, water sedge, fox sedge, bentgrass, and meadow timothy. URS delineated this as a wetland.
BPI 5	N 4110939 m, E 263693 m	This BPI is emergent hydrophytic vegetation along both sides of Klusman Park Creek, and comprised primarily of long-leaved cattail, panicled bulrush, meadow timothy, bentgrass, and water sedge (Figures 4.9 and 4.12). Northern harrier hawk spotted foraging in area. The BPI is already spanned by the existing Iron Horse 115kV Transmission Line and will not be impacted. URS identified this as a Waters of the US.
BPI 6	N 4108299 m, E 263647 m	Large cattail marsh formed in natural previously dry channels of small basin as a result of irrigation runoff (Figure 4.8). Northern harrier hawk spotted foraging in the area. The BPI is already spanned by the existing Iron Horse 115kV Transmission Line and will not be impacted. URS identified as a wetland.



**Table 4.5 Biological Points of Interest (Continued)**

BPI 7	N 4107068 m, E 263642 m	Natural entrenched arroyo turned into cattail marsh zone by irrigation runoff (Figures 4.8 and 4.13). A dozen active Gunnison's prairie dog burrows occur on west side of easement on terrace near cattails. This BPI Includes meadow patches and a sandbar willow stand, 4-6 ft high on south side of channel and bank. URS identified as a Waters of the US.
BPI 8	N 4106815 m, E 263615 m	Active Gunnison's prairie dog colony in dry barren pasture with P-J trees above irrigated field; approximately 50 prairie dog burrows (Figures 4.8 and 4.15); URS identified this as a Waters of the US
BPI 9	N 4106292 m, E 263611 m	A natural intermittent arroyo enhanced by irrigation runoff with thin riparian marsh zone, 4 to 10 ft wide on either side of channel, composed primarily of long-leaved cattail and panicked bulrush (Figure 4.8). URS delineated as a wetland.
BPI 10	N 4106134 m, E 262282 m	Large irrigation induced wetland formed in natural drainage and dominated by long-leaved cattails, water sedge, meadow timothy, canarygrass, panicked bulrush, and sandbar willow (Figures 4.8 and 4.13). URS delineated as a wetland.
BPI 11	N 4104626 m, E 261191 m	This BPI is a cluster of 60 Arboles milkvetch ( <i>Astragalus oocalycis</i> ) plants in old road cut along lower slope of Mesa Mountains descent, surrounded by lower montane chaparral. The species is considered sensitive in NM, but not in CO. This area is spanned by the proposed transmission line and will not be affected (Figure 4.7).
BPI 12	N 4104400 m, E 257666 m	Rare occurrence of scrub live oak ( <i>Quercus turbinella</i> ) in southwestern Colorado; several small seedlings occur at base of small 20-foot San Jose sandstone cliff, although the area will be spanned and not affected (Figure 4.6)
BPI 13	N 4103545 m, E 256454 m	The BPI is a medium-sized stick nest barely visible within a cubby of small, south-facing San Jose Formation sandstone cliff within P-J Woodland, Aspect 2 vegetation at confluence of Trail Canyon with unnamed side canyon, about 1/8 mile north of APE; whitewash is streaming down from cubby, but did not appear to be occupied during 2012 season, probable hawk nest; cliff face is somewhat broken but 30-40 ft high (Figure 4.6)

**Table 4.5 Biological Points of Interest (Continued)**

BPI 14	N 4103392 m, E 256221 m	This BPI is a concentration of 100+ Arboles milkvetch ( <i>Astragalus oocalycis</i> ) plants in stand of big sagebrush, rubber rabbitbrush, and crested wheatgrass of side canyon to Trail Canyon (Figures 4.6 and 4.14). The species is considered sensitive in NM, but not in CO. This area is spanned by the proposed transmission line and will not be affected.
BPI 15	N 4105586 m, E 249282 m	BPI 15 is a riparian zone of sandbar willow ( <i>Salix exigua</i> ) in wash of upper Sixshooter Canyon; the stand is 8-12 ft high and varies from 10 to 60 ft wide; most of the willow is dead, possibly due to summer drought conditions of 2011-2012; the understory is dominated by smooth brome and the perimeter is fringed with heath aster, foxtail barley, and cocklebur; groundwater must be close to surface, probably an isolated, subsurface hydrology catchment has formed (Figure 4.4). The area will be spanned by the transmission line and will not be affected. URS did not identify this as a wetland or Waters of the US.
BPI 16	N 4104777 m, E 246927 m	Ponderosa pine grove in upper side canyon to Little Cow Canyon comprised of ponderosa pine, Rocky Mountain juniper, and one fir tree; there are 11 ponderosa pine trees, six of which are 24 to 28-inch dbh, two are young trees 10 to 20 ft high, and the remainder are 18-20-inch dbh (Figures 4.3 and 4.4); The stand is located at slope base along the bottom of tilted San Jose Formation sandstone bedrock exposure that has created abnormally high runoff and soil moisture, creating a micro-environment suitable for the trees at a relatively low elevation; the understory is composed of Gambel oak, antelope bitterbrush, muttongrass, meadow sage, hairy goldenaster, California brickellbush, James buckwheat, and sumac; complete lack of seedlings, saplings, and age class structure suggests suitable germination environment may only occur every 50+ years or so; MBTA hotspot; sharp-shinned hawk, Townsend solitaire, American robin, and warblers, among others, observed multiple times; Tri-State rerouted easement to avoid as discussed above in plant community descriptions (Section 4.1.2.4)
BPI 17	N 4100692 m, E 246070 m	BPI 17 is a rare occurrence of a scrub live oak ( <i>Quercus turbinella</i> ) shrub in southwestern Colorado; several probable hybrids ( <i>Q. gambelii</i> x <i>turbinella</i> ) south along road; pole placement is on the opposite side (E) of existing road and would not be impacted by the project (Figures 4.2 and 4.16).

**Table 4.5 Biological Points of Interest (Continued)**

BPI 18	N 4100592 m, E 246105 m	Three scrub live oak ( <i>Quercus turbinella</i> ) shrubs and one thicket along road, probably several more in general vicinity (Figure 4.2); associated vegetation is primarily antelope bitterbrush, Gambel oak, and mountain mahogany; pole placement is on the opposite side (E) of existing road and would not be impacted by the project.
BPI 19	N 4098950 m, E 245115 m	300+ plants of the rare sessile-flowered false carrot ( <i>Aletes sessiliflorus</i> ) below San Jose Formation sandstone cliff and in shadows of large boulders; west facing 10 to 30-degree slopes in a pale yellowish brown sandy loam residuum; in P-J woodland with understory of muttongrass, hairy goldenaster, and James buckwheat; the species is considered sensitive by NM BLM, but has no status in CO; Nature Conservancy's Natural Heritage Rank is G3 for "vulnerable throughout its range or found locally in restricted area" with 21-100 occurrences and considered threatened; the rare plant location will be spanned by the proposed transmission line and will not be affected (Figures 4.2, 4.17, and 4.18)
BPI 20	N 4098999 m, E 244856 m	Narrowleaf cottonwood gallery forest on east side of Animas River floodplain, between Ralston Ditch and riverbank (Figures 4.2 and 4.19); west side of river is a farm and irrigated pasture; subcanopy is dominated by box elder trees and shrubs, the understory is dominated by skunkbrush thickets, prolific Virgin's bower, sandbar willow, New Mexico olive, chokecherry, and spike bentgrass; a seemingly unoccupied raptor nest observed high within cottonwood tree; on both visits, a Northern harrier hawk was observed roosting in nearby trees. The riparian forest may be suitable reproductive habitat for the yellow-billed cuckoo and winter roosting habitat for bald eagle (see Section 5). Area will be spanned by transmission line and habitat will not be modified.
BPI 21	N 4099043 m, E 244320 m	Russian knapweed ( <i>Acroptilon repens</i> ) infestation outbreak of 300+ plants around perimeter of Conoco-Phillips (Burlington) Carter Ute COM 734 well pad and compressor site on SUIR lands adjacent to proposed easement; a federal, state, and county listed noxious weed (Figure 4.2)





**Figure 4.13 View North Towards BPI 4 in Middle Ground with BPI 1 at Far Right Center (Top) and View North of BPI 5 Along Klusman Park Creek (Bottom)**





**Figure 4.14 Views North of Irrigation Runoff Induced Wetlands at BPI 7 (Top) and BPI 10 (Bottom)**





**Figure 4.15 View Northeast of Arboles Milkvetch Plants at BPI 14 (Top) and Close-up of Arboles Milkvetch (Bottom)**





**Figure 4.16 View East of Gunnison's Prairie Dog Town at BPI 8 (Top) and View North of Nest Site at BPI 13 (Bottom)**





**Figure 4.17** View of *Quercus turbinella* Shrub Facing North (Top) and Closeup of *Quercus turbinella* (Bottom) at BPI 17





**Figure 4.18 View of *Aletes sessiliflorus* and Habitat at BPI 19**





**Figure 4.19** View of *Aletes sessiliflorus* Plants at Cliff Base (Top) and Close-up of *Aletes sessiliflorus* (Bottom) at BPI 19





**Figure 4.20 View of Cottonwood Gallery Forest Habitat at BPI 20 (Top) and Probable Raptor Nest Site (Bottom) at BPI 20**



### 4.3.1 Noxious and Invasive Weeds

Two noxious weed infestations were identified, including a major Russian knapweed outbreak (BPI 21) on SUIR land and a particularly dense concentration of Canada thistle (BPI 2) on private land. Canada thistle was found in low-densities in various irrigated pastures and around the perimeter of wetlands in the northern portion of the project, mostly on private lands. The spread of these noxious weeds can be minimized by spraying the infestations prior to flowering and construction disturbance, in addition to post-construction monitoring measures.

### 4.3.2 Wetlands

Eight potential wetlands or areas fringed with riparian vegetation were identified (BPI's 3-7, 9, 10, and 15) within the project easement, six of which appear to be attributed entirely to irrigation runoff. Two of the crossings, at Klusman Park Creek and Rock Creek, may be natural wetlands, although irrigation runoff greatly enhances these water courses as well. None of the wetland areas, with the possible exception of proposed access near BPI 10, will be disturbed by the project, as currently designed, and will be spanned by the transmission line. However, these wetland and riparian zones provide nesting habitat for migratory birds. BPIs 4, 6, and 10 are wetlands identified by URS, with BPI 10 fully delineated because of its proximity to proposed construction. BPIs 3, 5, 7, and 9 exhibit fringe riparian vegetation and were identified as Waters of the United States by URS. BPI 15 exhibits some fringe riparian vegetation with stands of sandbar willow; however, URS did not identify this drainage as a Water of the United States. In consultation with the USACE, URS conducted fieldwork in 2012 and 2013 in support of a pending preliminary jurisdictional determination of Wetlands and Waters of the US and identified these BPIs as either wetlands (BPIs 4, 6, and 10), Waters of the United States (BPIs 3, 5, 7, and 9), or a non-jurisdictional drainage (BPI 15).

### 4.3.3 Migratory Birds

All of the 52 bird species observed during field surveys are protected under the MBTA, and many more bird species likely occur in the area. Approximately 30 bird species were inferred to be nesting within the project area. A total of seven BPI's (BPI's 1, 4, 7, 8, 13, 16, and 20) address potential MBTA concerns and consist of riparian forest, ponderosa pine woodland, Gunnison's prairie dog colonies with potentially suitable habitat for the burrowing owl (BPI's 7 and 8), probable raptor nest sites, and a red-winged blackbird nesting colony at a cattail marsh (BPI 4). The riparian forest habitat at BPI 20 included a probable raptor nest, Northern harrier hawk sightings, and is potentially suitable reproductive habitat for the yellow-billed cuckoo (*Coccyzus americanus*), albeit very limited due to the narrow width of the habitat zone along this portion of the Animas River.

### 4.3.4 Rare or Unique Plant Locations/Habitat

Three BPI's are rare plant locations (BPI's 11, 14, and 19) and four are disjunct plant populations of biological interest (BPI's 12, 16, 17, and 18). BPI's 11 and 14 are Arboles milkvetch (*Astragalus oocalycis*) concentrations, which is considered a rare species by New Mexico BLM, but is not considered as such in Colorado. The species is locally abundant in eastern La Plata and western Archuleta County, occurring in a variety of habitats, including road cuts and dryland pasture. The Arboles milkvetch was also found sporadically from Pole 1 (on the existing Iron Horse line) south to Pole 354 at the base of the Mesa Mountains. BPI 19 is a large concentration of the sessile-flowered/ New Mexico false carrot (*Aletes sessiliflorus*), a species considered rare in New Mexico and Colorado (see Colorado Natural Heritage Program), and identified as a rare plant that may occur on the SUIR during the recent 80 Acre

Infill Oil and Gas Development Programmatic Environmental Assessment (EES 2009: 3-25 to 3-28). BPI's 12, 17, and 18 are rare locations of scrub live oak (*Quercus turbinella*) in southwestern Colorado, whose distribution is typically restricted to the mountains of southern to central Arizona and New Mexico. BPI 16 is an isolated ponderosa pine woodland at a lower elevation than usual. The locale has a unique age class and the existence of this stand is probably dependent on a soil moisture regime enhanced by runoff from sandstone bedrock exposed upslope of the stand. Tri-State rerouted the proposed easement to avoid impacting any of the ponderosa pine trees.

## 5.0 Threatened and Endangered Species and Status

This section evaluates the potential of species listed as endangered, threatened, candidate, or proposed under the ESA of 1973 to inhabit the proposed project area. The BIA through the SUIT Wildlife Department provides regular updates to biologists of federally listed candidate, proposed, threatened, and endangered species with potential to occur within the external boundaries of the SUIR. The last update received was dated March 6, 2012. Steve Whiteman, Wildlife Resource Management Division Head for the SUIT was also consulted during the prefield records review. Neither the SUIT nor USFWS noted any known habitat or occurrences of threatened and endangered species in the proposed project area. The bald eagle (*Haliaeetus leucocephalus*) was recently delisted and occurs within the SUIR, but is considered in the sensitive species section of this report given the protection under the Bald Eagle Protection Act (16 USC 668-668d) and the MBTA (16 USC 703). Names and regulatory status of federally listed species are presented in Table 5.1 and given detailed consideration below. The Gunnison's prairie dog montane populations were recently listed as Candidate species under the Endangered Species Act. While Gunnison's prairie dogs occur within the project (BPI's 7/8), they are considered the unprotected plains populations and are not further considered. Additionally, this section evaluates the potential for species listed by the State of Colorado as endangered or threatened, as well as unprotected, sensitive species of special concern (not a statutory category), to occur within the project area. The USFWS, CPW, Colorado Natural Heritage Program, and various databases were consulted to compile a list of sensitive species with potential to occur in La Plata County. These species and their habitat affiliations are addressed in Table 5.2 for animals and Table 5.3 for plants. Species detailed in Tables 5.2 and 5.3 do not have formal regulatory status, with the exception of MBTA species, and are considered here for conservation purposes only.

**Table 5.1 Federal Threatened, Endangered, and Candidate Species with Potential to Occur Within the SUIR**

Common Name	Scientific Name	Federal/State Status
Canada lynx	<i>Lynx Canadensis</i>	USFWS: Threatened CO: Endangered
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	USFWS: Endangered CO: Threatened
Knowlton's cactus	<i>Pediocactus knowltonii</i>	USFWS: Endangered
Mexican spotted owl	<i>Strix occidentalis</i>	USFWS: Threatened CO: Threatened
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	USFWS: Candidate



**Table 5.1 Federal Threatened, Endangered, and Candidate Species with Potential to Occur within the SUIR (Continued)**

Common Name	Scientific Name	Federal/State Status
Pagosa skyrocket	<i>Ipomopsis polyantha</i> (Rydborg) Grant	USFWS: Candidate
Razorback sucker	<i>Xyrauchen texanus</i>	USFWS: Endangered CO: Endangered
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>	USFWS: Endangered CO: Endangered
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	USFWS: Candidate CO: Species of Concern
North American wolverine	<i>Gulo gulo luscus</i>	USFWS: Candidate CO: Endangered

**Table 5.2 Animal Species of Special Concern with Potential to Occur in La Plata County, Colorado**

Common Name	Scientific Name/Status	Habitat	Likelihood of Occurrence
American peregrine falcon	<i>Falco peregrinus anatum</i>  CO: Threatened	Nests on cliffs usually over 100 ft tall within wooded and forested habitats with openings, often near riparian zones	Suitable large cliff face habitat is lacking in the project, although there are smaller cliffs above the Animas River within a 1/4-mile radius of easement near Pole 255, although none observed
Bald eagle	<i>Haliaeetus leucocephalus</i>  CO: Threatened, Bald Eagle Protection Act	Roosting and nesting habitat includes large trees or cliffs near water containing abundant fish populations.	Suitable habitat occurs at BPI 20 along the Animas River between Poles 254 and 255, although none observed; a known winter roost occurs about 1/4-mile from Iron Horse Substation
Boreal toad	<i>Bufo boreas boreas</i>  CO: Endangered	Suitable habitat occurs between 7,500-12,000 ft in vicinity of damp areas, such as springs, streams, and wet meadows	No suitable damp soil habitat within the elevation range
Botta's pocket gopher	<i>Thomomys bottae</i>  CO: Special Concern	Inhabits riparian areas of valley bottoms with sandy soils, grasslands to open montane woodlands	No suitable sandy soil riparian habitat is present
Burrowing owl	<i>Speotyto cunicularia</i>  CO: Threatened	Nesting in small colonies in deserted mammal burrows, particularly prairie dogs; grasslands and scrublands	Suitable prairie dog burrow habitat is present at BPI's 7 and 8, although none were observed

**Table 5.2 Animal Species of Special Concern with Potential to Occur in La Plata County, Colorado (Continued)**

<b>Common Name</b>	<b>Scientific Name/Status</b>	<b>Habitat</b>	<b>Likelihood of Occurrence</b>
Colorado cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i> CO: Special Concern	Cool, clear water mountain streams and lakes, preferring streams of moderate gradient with a clean gravel substrate lacking fine sediments	No suitable mountain stream habitat is present
Common kingsnake	<i>Lampropeltis getula</i> CO: Special Concern	Diverse habitats, from riparian areas to dry, rocky and wooded hillsides with good cover up to 6,900 ft.	Suitable habitat with good cover may be present intermittently throughout much of the project, although none observed
Desert spiny lizard	<i>Sceloporus magister</i> CO: Special Concern	Arid to semi-arid, low elevation areas with good rock and vegetation cover	No suitable low elevation rocky habitat is present
Ferruginous hawk	<i>Buteo regalis</i> CO: Special Concern	Inhabits open, arid grasslands and scrublands; conspicuous nests	Suitable habitat may be present along the 115kV Iron Horse power line, although none observed and prefers remote habitat
Great Basin spadefoot	<i>Spea intermontana</i> CO: Special Concern	Burrowing in loose soils and animal burrows from forests to sagebrush flats	Suitable habitat may occur sporadically in project, although loose soils are generally lacking and no Great Basin spadefoots were observed
Greater sage grouse	<i>Centrocercus urophasianus</i> CO: Special Concern	Inhabits sagebrush dominated landscapes	Suitable habitat may occur along Iron Horse 115kV power line, although none observed and outside of known range in western and northwestern Colorado
Gunnison sage-grouse	<i>Centrocercus minimus</i> CO: Special Concern	Inhabits sagebrush dominated landscapes, nearest known population is near Dove Creek, CO	Suitable habitat may occur along Iron Horse 115kV, although none were observed and outside known geographic range; nearest population is Dove Creek
Kit fox	<i>Vulpes macrotis</i> CO: Endangered	Occurs in a wide variety of arid lands, particularly grasslands and scrublands	No suitable arid land habitat is present
Long-nosed leopard lizard	<i>Gamelli wislizenii</i> CO: Special Concern	Gravelly to sandy arid areas with sparse or clumped vegetation	No suitable arid land habitat is present



**Table 5.2      Animal Species of Special Concern with Potential to Occur in La Plata County, Colorado (Continued)**

<b>Common Name</b>	<b>Scientific Name/Status</b>	<b>Habitat</b>	<b>Likelihood of Occurrence</b>
Midget faded rattlesnake	<i>Crotalus viridis concolor</i> CO: Special Concern	Occurs in a wide variety of usually rocky habitats with good cover from deserts to timberline	Suitable rocky habitat may be present between Poles 249 to 255
Northern leopard frog	<i>Rana pipiens</i> CO: Special Concern	Riparian freshwater areas with good water quality, ditches, streams, ponds, moist meadows, and lakes along emergent wetland edges; desert to mountains	Not likely to occur, no good quality water habitat is present, mostly irrigation induced wetlands of poor water quality (high salinity)
River otter	<i>Lutra canadensis</i> CO: Endangered	Occurs along montane wooded rivers, ponds, and lakes	No suitable montane wooded river or lake habitat is present
Roundtail chub	<i>Gila robusta</i> CO: Special Concern	Large and warm tributaries of the Colorado River Basin, often in large, deep channels, among boulders and cliff and vegetation overhangs	No suitable warm water habitat with deep channels is present
Townsend big-eared bat	<i>Corynorhinus townsendii pallescens</i> CO: Special Concern	Roosts and rears young in crevices, caves, lava tubes, mines, and buildings from the desert to montane forests	Suitable habitat is present in crevice cliff habitat found sporadically between 251 to 262, while none were observed, remnants of probable bat guano were found along small cliffs
Western snowy plover	<i>Charadrius alexandrinus</i> CO: Special Concern	Occurs on sandy beaches on coasts and similar habitats in the West, often along alkaline lake shores	No suitable sandy lake shore habitat is present

**Table 5.3 Sensitive Plant Species with Potential to Occur in La Plata County, Colorado**

Common Name	Scientific Name	Habitat	Likelihood of Occurrence
Arboles milkvetch	<i>Astragalus oocalysis</i> NM BLM	Seleniferous clay soils in sagebrush habitats	<b>Present</b> within the project at BPI's 11 & 14, also occurs sporadically from Pole 1 south to Pole 354
Aztec milkvetch	<i>Astragalus proximus</i> CO BLM, FS: Sensitive, CNHP	Inhabits sandy to alkali clay soils on Nacimiento and San Jose Formations, Lewis Shale, and Mancos Shale, P-J woodland and montane shrubs; 5,400-7,300 ft	Suitable habitat may occur throughout much of the project area, although none were observed; author located a small population one mile east of project in 2008 (Loebig 2008: 24-27) and may occur in the project area, species probably dormant in 2012 drought
Brandege's milkvetch	<i>Astragalus brandegei</i> CO BLM: Sensitive	Occurs in P-J woodland, most often in basaltic or igneous derived gravels and washes; 5,400 to 8,800 ft	Suitable habitat may occur in the Mesa Mountains in areas of exposed glacial outwash gravels, although none were observed
Cliff Palace milkvetch	<i>Astragalus deterior</i> CNHP: Sensitive	Occurs in cracks and depressions in sandstone rimrock habitat of mesa edges	Suitable habitat may be present near Pole 254, although none were observed
Colorado tansy aster	<i>Machaeranthera coloradoensis</i> CO FS: Sensitive	Granitic gravels in alpine, subalpine dry tundra to montane parks and slopes; 8,500 to 12,500 ft	No suitable high altitude habitat is present
Dwarf rattlesnake plantain	<i>Goodyera repens</i> CO: Sensitive	Shady locales in deep forests along streams, among duff and moss; 8,000 to 9,500 ft	No suitable shady forest habitat along high elevation streams is present
Gray's Townsend-daisy	<i>Townsendia glabella</i> CNHP: Sensitive	Steep slopes of Mancos Shale residuum	No suitable Mancos Shale residuum habitat within project area
Green Sedge	<i>Carex viridula</i> CO BLM & FS: Sensitive	Calcareous fens and bogs; 8,700 to 9,200 feet	No suitable high elevation fen and bog habitat is present
Giant helleborine	<i>Epipactis gigantea</i> CO BLM & FS: Sensitive	Inhabits springs, hot springs, and seeps on sandstone ledges and cliffs; 4,800 to 8,000 ft	No suitable spring or seep habitat near ledges and cliffs is present



**Table 5.3 Sensitive Plant Species with Potential to Occur in La Plata County, Colorado (Continued)**

Common Name	Scientific Name	Habitat	Likelihood of Occurrence
Little penstemon	<i>Penstemon breviculus</i> CO: Sensitive	Clay loam soils in P-J woodlands, grassland and sagebrush habitats; 4,900 to 6,700 ft	Suitable habitat may occur throughout much of project, although none were observed
Missouri milkvetch	<i>Astragalus missouriensis</i> var. <i>humistratus</i> CNHP: Sensitive	Open, sparse and dry meadow openings in ponderosa pine or Gambel oak habitats	Suitable habitat may occur in Gambel oak chaparral habitat on top of the Mesa Mountains, although none were observed
Pagosa bladderpod	<i>Lesquerella pruinosa</i> CO FS: Sensitive	Fine-textured soils on Mancos Shale; barren areas adjacent to montane meadows and woodlands; 6,800 to 8,300 ft	No suitable Mancos Shale soil habitat is present
Pagosa phlox	<i>Phlox caryophylla</i> CNHP: Sensitive	Open woodlands and sagebrush in deep soils	Suitable habitat may occur north of the Mesa Mountains, although none were observed and outside of known range
Pictureleaf wintergreen	<i>Pyrola picta</i> CO: Sensitive	Inhabits cool, moist slopes and ravines in mixed coniferous forests; 6,000 to 9,800 ft	No suitable moist and cool forest habitat is present
Sandstone milkvetch	<i>Astragalus sesquiflorus</i> CO BLM: Sensitive	Ledges, fissures, and talus of sandstone cliffs and domes; rarely along sandy washes; 5,000 to 5,500 ft	No suitable low elevation sandstone habitat is present
Sessile-flowered Indian Parsley/ New Mexico false carrot	<i>Aletes sessiliflorus</i> NM BLM: Sensitive; Natural Heritage Rank G3	Occurs at base of sandstone cliffs and talus of San Jose Formation; 6,000 ft to 7,500 ft	<b>Present</b> within project area at BPI 19; over 300+ plants at cliff base and between large boulders
Small-flowered penstemon	<i>Penstemon parviflorus</i> CO: Sensitive	Unknown, only one specimen collected in SW Colorado in 1890; distinct whorled three leaves at each node	Type locality is probably near Mancos, Colorado, habitat requirements are not known, unlikely to occur in the survey area
Southern maiden-hair fern	<i>Adiantum capillus-veneris</i> CO FS: Sensitive	Seeps and dripping springs on cliffs or along alkali drainages; 4,800 to 7,800 ft, widely disjunct	No suitable seep and spring habitat is present

**Table 5.3 Sensitive Plant Species with Potential to Occur in La Plata County, Colorado (Continued)**

Common Name	Scientific Name	Habitat	Likelihood of Occurrence
Violet milkvetch	<i>Astragalus iodopetalus</i> CNHP: Sensitive	Sagebrush and P-J woodlands on rocky hillsides	Suitable habitat may be present in various areas between Poles 249 and 255, although none were observed
Wood lily	<i>Lilium philadelphicum</i> CO: Sensitive	Inhabits areas of moist soils in meadows, thickets, and woods; 6,800 to 9,800 ft	No suitable wet meadow habitat is present
Yellow lady's-slipper	<i>Cypripedium calceolus</i> ssp. <i>parviflorum</i> CO BLM & FS Sensitive	Saturated soils and bogs in aspen and mixed coniferous forests of ponderosa pine and Douglas fir; 7,400-8,500 ft	No suitable high elevation bog or saturated soil habitat is present

## 5.1 Mammals

### 5.1.1 Canada Lynx

The Canada lynx (*Lynx canadensis*) is a federally listed threatened species under the ESA of 1973 and considered endangered by the State of Colorado. A member of the cat family (*Felidae*), the Canada lynx is a carnivore that historically occurred throughout northern United States and Canada. Its preferred habitat in the western United States consists of sub-alpine coniferous forests in mountainous terrain with open canopies, outcrops and boulders, and sufficient under story herbage to support the snowshoe hare, its primary food source (Fitzgerald et al. 1994). The Canada lynx is an elusive creature that does not occur in the open, preferring forested corridors for travel. They are often associated with areas subject to deep and lingering snow pack. Extirpated from 13 of the 16 states Canada lynx was historically known to occupy, the CPW reintroduced the lynx in 1999 to 2000 in southern Colorado, with mixed results (USFWS 2000). No potential habitat for the Canada lynx occurs in the project area and no Canada lynx were observed. The project is expected to have no impact on the Canada lynx.

### 5.1.2 New Mexico Meadow Jumping Mouse

The New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) is a candidate species under the ESA of 1973. The small rodent is in the jumping mice family (*Dipodidae*) and is a herbivore and insectivore known from New Mexico, Arizona, and Southern Colorado. The New Mexico meadow jumping mouse is brown above and white below with sides of yellowish or orangish brown. It can be distinguished by well-developed hind legs, long tail, jumping ability, and often by a bipedal gait. The New Mexico meadow jumping mouse is a riparian affiliate preferring streamside vegetation, including dense grass and willow habitats, as well as montane meadow habitats. Breeding occurs from May to September and the nest is usually a small burrow above the water table. Overgrazing of livestock in streamside vegetation and periodic flash flooding may contribute to the rarity of the species (BISONM 2011). The New Mexico

meadow jumping mouse may occur in diverse riparian areas of the upper Animas River in Colorado. Because the SJBEC Project would not affect any riparian or wetland habitats and would span the Animas River, the project is expected to have no impact on the New Mexico meadow jumping mouse.

### **5.1.3 North American Wolverine**

The North American wolverine (*Gula gula luscus*) is a candidate species under the ESA of 1973 and considered endangered by the State of Colorado. It is the largest species in the *Mustelidae* family and males can weigh up to 40 pounds. The wolverine has the appearance of a small bear but has a comparatively long bushy tail. It has dark brown to black fur, a yellowish to white side stripe, a massive rounded head, small eyes, and short rounded ears (USFWS 2012). In Colorado, the wolverine was reported intermittently through the years since the last confirmed sighting in 1919 and was feared to be extirpated however, one wolverine was tracked and confirmed to be in north-central Colorado in 2009 (CPW 2012). The wolverine has a circumpolar distribution and is associated with areas of deep lingering snowpack. In Colorado, sightings have been reported from high alpine environments. The wolverine diet is opportunistic and can include small mammals, birds, berries, and even insects. It may prey on large game if an animal is stuck in deep snow, but most often obtains big game in the form of carrion. The wolverine will often cache food in boulders for later use (USFWS 2012). No potential habitat for the wolverine occurs in the project area and none were observed. The project is expected to have no impact on the wolverine.

## **5.2 Birds**

### **5.2.1 Mexican Spotted Owl**

The Mexican spotted owl (*Strix occidentalis lucida*) is a protected threatened species under the ESA of 1973 and considered threatened by the State of Colorado. The Mexican spotted owl is a deep forest affiliate and member of the owl family (*Strigidae*) (Udvardy and Farrand 1994: 563). Mexican spotted owl habitat consists of mature montane, mixed coniferous forest preferring uneven-aged stands with good canopy closure, open flyways for foraging, and usually with numerous downed logs. The Mexican spotted owl is a nocturnal predator that feeds on rodents and usually active following dusk and just prior to dawn. It also occurs in riparian woodlands and in shaded, wooded, steep canyons with cool microclimates (USFWS 1998). Mexican spotted owl habitat does not occur in the project vicinity and no Mexican spotted owls were observed. The proposed project is expected to have no impact on the Mexican spotted owl.

### **5.2.2 Southwestern Willow Flycatcher**

The Southwestern willow flycatcher (*Empidonax traillii extimus*) is a protected threatened species under the ESA of 1973, protected under the MBTA (16 USC 703), and considered endangered by the State of Colorado. The Southwestern willow flycatcher is a brownish, olive-green colored member of the tyrant flycatcher family (*Tyrannidae*) (Udvardy and Farrand 1994: 604-605). It occurs in riparian habitats along rivers, streams, or other wetlands with dense, multi-layered growth of willows or other shrubs and medium sized trees. The flycatcher is frequently parasitized by cowbirds (Sogge et al. 1997). The Southwestern willow flycatcher can occur wherever suitable habitat occurs. On the Navajo Nation, it has been known to occupy less than ideal habitats. Breeding pairs are known to occur along the San Juan River and Colorado River (NNHPDFW 2001). Potentially suitable, although somewhat marginal, reproductive habitat for the Southwestern willow flycatcher may occur at BPI 20, the riparian forest patch



adjacent to the east side of the Animas River. However, this habitat will not be modified and is spanned entirely by the transmission line between Poles 254 and 255. It is unlikely the species is present during the nesting season on the Animas River. Nearby surveys along the Animas River failed to detect any willow flycatchers during the nesting season (BLM 2002). It should be noted that since the habitat for this species is divided by state, as are the biological survey reports, the reader should reference Loebig and Paulek's (2013) findings and recommendations for New Mexico.

### **5.2.3 Yellow-billed Cuckoo**

The yellow-billed cuckoo (*Coccyzus americanus*) is a federal candidate for listing under the ESA of 1973, protected under the MBTA (16 USC 703), and considered endangered by the State of Colorado. The yellow-billed cuckoo is a gray and white, medium-sized bird (12") with a down-curved, yellow-based bill with long tail. The yellow-billed cuckoo is a member of the *Cuculidae* family (Udvardy and Farrand 1994: 553-554). The bird is omnivorous, but feeds primarily on caterpillars. Other prey includes cicadas, grasshoppers, beetles, bugs, ants, wasps, frogs, lizards, and small fruits (Howe 1986). The yellow-billed cuckoo winters in mature tropical forests, returning to the United States, northern Mexico and southern Canada for nesting (CBD 2000). The yellow-billed cuckoo breeds in low to mid-elevation riparian woodlands, deciduous woodlands, and abandoned farms and orchards (Finch 1992). Potentially suitable reproductive habitat for the yellow-billed cuckoo occurs at BPI 20, the narrowleaf cottonwood gallery forest patch along the east side of the Animas River. This habitat will not be modified and is spanned entirely by the transmission line. The small size of this patch of forest is not optimal for this species. No birds have been detected at this location, though no formal protocol surveys have been conducted. In addition, Biologists from the BLM, SUIT, and USFWS have indicated that the area near the Animas River lacks appropriate nesting habitat for cuckoos (Ireland 2012, Kendall 2013).

## **5.3 Fish**

### **5.3.1 Colorado Pikeminnow**

The Colorado pikeminnow (*Ptychocheilus lucius*), formerly known as the Colorado squawfish, is a member of the minnow family (*Cyprinidae*). The Colorado pikeminnow is a federally listed endangered species under the ESA of 1973 and considered endangered by the State of New Mexico. Adult fish show a preference for deep pools with strong currents on major rivers with sandy to rocky substrates. Juvenile Colorado pikeminnow inhabit backwater eddies and side channels with silt to sand substrates (Haynes and Schuetze 1997). Historically, the Colorado pikeminnow was endemic to the entire Colorado River system, including the Gila and Salt Rivers, but is now restricted to the upper reaches of the watershed in Colorado, Utah and New Mexico. A reproducing population of Colorado pikeminnow has been documented on the San Juan River between Shiprock, New Mexico to near the Four Corners area (Propst 1999). Suitable Colorado pikeminnow habitat does not occur in the project vicinity. Furthermore, no river water depletions are associated with the proposed project. The project is not expected to impact the Colorado pikeminnow.

### **5.3.2 Razorback Sucker**

The razorback sucker (*Xyrauchen texanus*) is a member of the sucker family (*Catostomidae*) and listed as endangered by the USFWS and Navajo Nation (Group 2), and sensitive by the State of New Mexico. The razorback sucker formerly occurred throughout the tributary system of the Colorado River, but is now

limited to only a few, scattered localities. Historically, the razorback sucker became extirpated in the San Juan River, although restocking efforts have occurred with unknown results (Propst 1999). The razorback sucker is found in large rivers, 1.2 to 3.0 m in depth, with strong currents or backwaters with silt to rocky substrates (Haynes and Schuetze 1997). Habitat suitable for the razorback sucker does not occur in the project vicinity. Furthermore, no river water depletions are associated with the proposed project. The project is not expected to impact the razorback sucker.

## **5.4 Plants**

### **5.4.1 Knowlton's Cactus**

Knowlton's cactus (*Pediocactus knowltonii*) is a member of the cactus family (*Cactaceae*) and listed as endangered by the USFWS and the State of New Mexico. The small cactus occurs as a solitary stem or a few in a cluster having un-grooved tubercles, minute radial spines (20 per areole), lacking central spines, and white to magenta flowers blooming April to May. Knowlton's cactus is only known from one locality near the Los Pinos River in San Juan County, New Mexico near the boundary with the SUIR. It occurs on a rolling hill with gravelly to cobbly substrates in piñon-juniper woodland and black sagebrush vegetation at 6,200 to 6,300 feet amsl (NMRPTC 2006). Potentially suitable habitat for Knowlton's cactus occurs in Quaternary cobble deposits on top of the Mesa Mountains (EES 2009: Map 3-4), although the elevation is approximately 1,000 ft higher than the one known location. However, none were observed during the pedestrian biological survey of the project. Therefore, the proposed project is not expected to impact the Knowlton's cactus.

### **5.4.2 Pagosa Skyrocket**

The Pagosa skyrocket (*Ipomopsis polyantha* (Rydberg) Grant) is a member of the phlox family (*Polemoniaceae*) and recently upgraded from a candidate species to endangered under the ESA of 1973. The plant is a biennial, 30-60 cm high, with one main stem unbranched at the base with branching upward along the stem. Leaves are pinnatifid, with narrow linear lobes, and a glandular-puberulent surface. The Pagosa skyrocket blooms from late May to early August. Flowers are about 10 mm in length, white, trumpet-shaped to salverform, sometimes purple-dotted, and with exerted stamens. Flowers are borne in axillary clusters along the stems. Distribution of the Pagosa skyrocket appears restricted to the vicinity of Pagosa Springs, although suitable habitat may occur elsewhere, and it is considered at high risk due to the pace of residential and commercial development in the area. Suitable habitat consists of fine textured soils of the Mancos Formation on barren residuum or within ponderosa pine, Gambel oak, or piñon-juniper communities with similar substrates, at about 7,000 ft amsl (CRPTC 2006; Harrington 1954: 447-448). Habitat suitable for the Pagosa skyrocket does not occur within or adjacent to the project and none were observed. The project is not expected to impact the Pagosa skyrocket.

## **5.5 Migratory Bird and Non-Endangered Raptor Concerns**

Pursuant to the MBTA (U.S. Code Title 16, Chapter 7, 703-712) (MBTA), illegal take of migratory birds is prohibited by federal law. The MBTA implements the treaties that the U.S. has signed to protect birds that migrate across our national borders. The MBTA prohibits the taking (killing), possessing, or selling of these protected bird species. On January 17, 2001, President Clinton issued Executive Order 13186 to instruct federal agencies to more fully implement the MBTA and prioritize conservation efforts to enhance and conserve migratory bird habitat and minimize actions that result in take of migratory birds.

A review of Birds of Conservation Concern issued by the USFWS in 2008 for the Southern Rockies/Colorado Plateau Region (USFWS 2008: BCR 16, Table 14) and the Partners in Flight Bird Conservation Plan for the Mesa and Plains Physiographic Area (Partners in Flight 2008: Area 85) was undertaken to produce a list of high priority migratory birds with potential to occur in the region (Table 5.4). Of the 38 priority migratory bird species with potential to occur in the Southern Rocky Mountain/Colorado Plateau region and Mesa and Plains Physiographic Area, four were identified during the biological field surveys, including the black-chinned hummingbird, juniper titmouse, Cassin's kingbird, and Virginia's warbler (Table 4.4). The juniper titmouse was seen or heard consistently in woodland habitats, as was the black-chinned hummingbird. The Virginia warbler was identified a few times, in both dry conifer woodland and lower montane chaparral habitats. A Cassin's kingbird was observed once perched on a fence near Pole 356.

Many other species in the area are protected under the MBTA that are not considered priority migratory birds. It should be noted that numerous other bird species are known to occur and nest in the general region but were simply not encountered during the fieldwork, particularly given the extreme drought conditions of 2012. Virtually all native, resident bird species are protected under the MBTA, in addition to neotropical, arctic, coastal, and other avian migrants. All of the bird species identified in Table 4.4 are protected under the MBTA.

A variety of mitigation measures can alleviate MBTA concerns posed by the project. The proposed action would result in additional habitat loss and fragmentation for avian species protected under the MBTA. To minimize impacts to migratory birds nesting adjacent to or within the project area, it is recommended that construction work, including stringing of the power lines with helicopters, be completed during the non-breeding season of each calendar year, when the majority of migratory birds nest. However, general surveys for MBTA-protected avian species would occur if construction activities cannot be avoided in this area during the MBTA breeding season (May 1 to July 31). Additionally, Tri-State should remove all nesting substrate and complete ground clearance where permitted outside of the breeding season to minimize nesting in construction areas. If areas cannot be entirely cleared outside of the breeding season, pre-construction surveys should be conducted and active nest sites flagged and avoided during construction. Tri-State will coordinate pre-construction nest surveys with the SUIT Wildlife Resource Management Division and USFWS if these conditions cannot be met.

**Table 5.4 Priority Migratory Bird Species With Potential to Occur in the Region**

<b>Migratory Bird Species of Priority Concern</b>	<b>USFWS Birds of Conservation Concern</b>	<b>Partners in Flight Bird Conservation Plans</b>	<b>Habitat Affiliation</b>	<b>Potential to Occur in Proposed Action</b>
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American bittern <i>Botaurus lentiginosus</i>	X		Fresh or brackish water marshes and marshy lake shores	Moderate
American peregrine falcon <i>Falco peregrinus</i>	X		Open terrain, nesting on cliffs over 100 ft high in a variety of habitats next to lakes, streams, and rivers	Low
Bald eagle <i>Haliaeetus leucocephalus</i>	X		Inhabits lakes, rivers, coasts with abundant fish prey	Moderate to high
Bendire's thrasher <i>Toxostoma bendirei</i> (BLM: SSS)	X	X	Occurs in shrubby habitat in AZ and NM	Low
Black-chinned hummingbird <i>Archilochus alexandri</i>		X	Meadows, woodlands, lowlands, chaparral, mesas, and canyons	<b>Observed</b>
Black-chinned sparrow <i>Spizella atrogularis</i> (BLM: SSS)		X	Chaparral of desert mountain ranges and sagebrush	Low
Black rosy finch <i>Leucosticte atrata</i>	X		Breeds in alpine tundra and meadows, wintering in nearby lowlands	Moderate in winter
Brewer's sparrow <i>Spizella breweri</i>	X		Brushy areas, sagebrush, and desert scrublands	Moderate to high
Canyon towhee <i>Pipilo fuscus</i>		X	Arid and brushy canyon areas	Moderate to high
Cassin's finch <i>Carpodacus cassinii</i> (BLM: SSS)	X		Coniferous upper montane to subalpine forests	Moderate in wintertime
Cassin's kingbird <i>Tyrannus vociferans</i>		X	Sparse woods and dry scrublands	<b>Observed</b>
Cassin's sparrow <i>Aimophila cassinii</i>		X	Desert upland in areas of tall grass and scrubs such as yucca	Low
Chestnut collared longspur <i>Calcarius ornatus</i>	X		Shortgrass prairies and agricultural fields	Low, may migrate through area
Cordilleran flycatcher <i>Empidonax occidentalis</i>		X	Mountain forests and wooded canyons	Moderate
Ferruginous hawk <i>Buteo regalis</i>	X	X	Remote open prairie, arid grasslands, brushy open country, and badlands	Low
Flammulated owl <i>Otus flammcolus</i>	X	X	Ponderosa pine and oak forests	Low
Golden eagle <i>Aquila chrysaetos</i>	X		Arid open country, mountains, and foothills nesting on large cliffs	Low

**Table 5.4 Priority Migratory Bird Species With Potential to Occur in the Region (Continued)**

Migratory Bird Species of Priority Concern	USFWS Birds of	Partners in Flight Bird	Habitat Affiliation	Potential to Occur in
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	Conservation Concern	Conservation Plans		Proposed Action
Grace's Warbler <i>Dendroica graciae</i>	X	X	Pine forests and pine-oak forests	Low to moderate
Grasshopper sparrow <i>Ammodramus savannarum</i>	X		Grassy and weedy meadows, plains, and pastures	No to low potential
Gray flycatcher <i>Empidonax wrightii</i>		X	Sagebrush and P-J woodlands	Moderate to high
Gray vireo <i>Vireo vicinior</i> (BLM: SSS)	X	X	Dry brushy areas, P-J woodlands, and chaparral slopes of the SW mountains	Moderate
Juniper titmouse <i>Parus inornatus</i>	X	X	Sparse P-J and oak woodlands	Observed
Lewis's woodpecker <i>Melanerpes lewis</i>	X		Arid open woodlands, oak or cottonwood woodlands, and ponderosa pine forests	Moderate to high
Long-billed curlew <i>Numenius americanus</i>	X	X	Breeds on plains and prairies	No potential
Lucy's warbler <i>Vermivora luciae</i>		X	Woodlands and riparian zones	No to low potential
Montezuma quail <i>Cyrtonyx montezumae</i>		X	Grassy open woodlands on desert mountain slopes and canyons	No potential
Mountain plover <i>Charadrius montanus</i> (BLM: SSS)	X	X	Semi-arid plains and shortgrass prairies	No potential
Pinyon jay <i>Gymnorhinus cyanocephalus</i>	X	X	P-J woodlands throughout Southwest and Great Basin	High
Prairie falcon <i>Falco mexicanus</i>	X		Open semi-arid plains, grasslands, and other open country	Moderate
Red-faced warbler <i>Cardellina rubrifrons</i>		X	Southwestern upland forests above 6,000 ft	Low
Scaled quail <i>Callipepla squamata</i>		X	Arid grasslands and scrublands	No potential
Snowy plover <i>Charadrius alexandrinus</i>	X		Sandy beaches and alkaline lakes in the West	No potential
Swainson's hawk <i>Buteo swainsoni</i>		X	Prairies and desert grasslands	Low
Veery <i>Catharus fuscescens</i>	X		Deciduous woodlands, especially along streams	Low

**Table 5.4 Priority Migratory Bird Species With Potential to Occur in the Region (Continued)**

Migratory Bird Species of	USFWS Birds	Partners in	Habitat Affiliation	Potential to Occur in
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Priority Concern	of Conservation Concern	Flight Bird Conservation Plans		Proposed Action
Virginia's warbler <i>Vermivora virginiae</i>		X	Semi-arid woodlands, scrub, and oak shrublands	Observed
Western burrowing owl <i>Athene cunicularia</i>	X		Desert grasslands, prairies, and open scrublands	Low to moderate
Willow flycatcher <i>Empidonax traillii</i>	X		Dense riparian woodlands with openings along streams, wetlands, rivers, and lakes	Low
Wilson's phalarope <i>Phalaropus tricolor</i>		X	Marshes of meadows and lakes	Low

## 6.0 Conclusions



Tri-State's Colorado portion of the SJBEC project is not expected to impact federally protected species listed in Table 5.1 as suitable habitat is generally lacking within the proposed easement and access routes. Potentially suitable reproductive habitat for the yellow-billed cuckoo and Southwestern willow flycatcher may be present at BPI 20, although that habitat will not be modified and the project is not expected to impact the two bird species. Suitable habitat for the New Mexico meadow jumping mouse may be present near identified wetlands and the Animas River, but those habitats will be spanned by the transmission line, accessed by existing two-tracks and roads, and would not be disturbed by proposed or existing pole structures.

None of the sensitive animal species of concern listed in Table 5.2 were observed in the project area, although there is good potential for several of these species to occur, particularly the Townsend big-eared bat where potentially suitable roosting habitat occurs sporadically between Poles 251 to 262. Similar to MBTA-protected species, if construction were to occur in potential habitat for the Townsend big-eared bat during the breeding season, a pre-construction survey would be conducted to help ensure that there are no impacts. Also, bald eagle winter roost habitat is present at BPI 20 along the Animas River and data from the CPW indicates a previously reported bald eagle winter night roost is located in cottonwood trees just east of the Iron Horse Substation about one-quarter of a mile, outside the APE on private lands. If stringing of the transmission line is necessary between November 1 and March 31 between Poles 254 and 255, a pre-construction bald eagle survey should be conducted in those areas. For the bald eagle winter night roost near the Iron Horse Substation, CPW guidelines for the bald eagle state that no human encroachment is to occur from November 15 through March 15 within a one-half mile radius of an active winter night roost if there is a direct line of sight between the roost and the encroachment activities, which is the case. If periodic visits are required within the buffer after development, the activity should be restricted to the period between 10 AM and 2 PM.

Two of the rare plant species listed in Table 5.3 were identified within the project area, the sessile-flowered/New Mexico false carrot (BPI 19) and the Arboles milkvetch (BPI's 11 and 14). BPI's 11, 14, and 19 will all be spanned by the transmission line; therefore, the sessile-flowered/New Mexico false carrot and Arboles milkvetch would not be impacted by the project. The sessile-flowered/New Mexico false carrot population is located below a cliff and in steep talus just above the Animas River that is not accessible by vehicles. As this area would be spanned by the transmission line and not disturbed, the project would not affect the rare plant species. The Arboles milkvetch is locally abundant in La Plata and Archuleta Counties. Additional Arboles milkvetch plants and clusters thereof occur sporadically along the existing Iron Horse 115 kV Transmission Line portion of the project, but no new disturbance is proposed in those areas. In addition, existing access routes along the Iron Horse 115 kV portion of the project will be utilized and the plant species should not be affected. The Arboles milkvetch often occurs in road cuts and on ditch banks, indicating it is tolerant of disturbance and may thrive on it. The Aztec milkvetch has been found within a mile of the project however, it was not observed during the biological surveys, possibly due to dormancy during the extreme drought of 2012. In addition, three disjunct plant populations were found within the project area, including instances of scrub live oak (*Quercus turbinella*) at BPIs 12, 17, and 18 and the ponderosa pine woodland at BPI 16. Tri-State voluntarily rerouted the easement to avoid BPI 16, and BPI's 17 and 18 should not be impacted as the construction of Poles 263 and 264 occurs on the opposite side (E) of the road from the scrub live oak locations. BPI 12 is no longer within the project area due to a reroute that avoids nearby cultural resources.

The project area does contain suitable reproductive habitat for a number of migratory and native resident birds protected under the MBTA, including at least 30 of the 52 bird species listed in Table 4.4 and several priority migratory bird species listed in Table 5.4. A variety of mitigation measures can alleviate MBTA concerns posed by the project. To minimize impacts to migratory birds nesting adjacent to or within the project area, it is recommended that construction work, including stringing of the power lines with helicopters, be completed during the non-breeding season (from August 1 to April 30) of each calendar year, when the majority of migratory birds nest. Given the length and size of the project, it is unlikely that Tri-State will be able to construct the proposed project in its entirety outside of the avian breeding season. Therefore, Tri-State should remove all vegetation (nesting substrate) and complete ground clearance where permitted outside of the breeding season to minimize nesting in construction work areas. If work areas cannot be entirely cleared of vegetation outside of the breeding season, pre-construction nest surveys, including raptor surveys within a one-third mile radius of the project, should be conducted and active nest sites flagged and avoided during construction. Tri-State will coordinate pre-construction nest surveys with the SUIT Wildlife Resource Management Division and USFWS if these conditions cannot be met.

**Table 6.1 Bird Species Construction Avoidance Periods**

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Migratory birds (throughout project area)												
Yellow-billed cuckoo (BPI 20 only)												
Southwestern willow flycatcher (BPI 20 only)												
Bald eagle (BPI 20 and Iron Horse Substation only)												

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SEAS 12-059 July 2013



Appendix A:

List of Environmental Protection Measures (EPMs)



Exhibit

## Environmental Protection Measures and Design Standards

No.	Topic	Description of Measure	Phase
<b>Project Design, Transportation and Access, and Construction</b>			
12	Construction, Access	All construction access outside the right-of-way will be restricted to pre-designated access, contractor-acquired access, or public roads.	C, O
13	Construction, general	Stream and waterway crossings will be designed to minimize effects to surface waters and to ensure the long-term viability of the crossing in compliance with federal, state, and local regulations. All construction and maintenance activities will be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and stream banks. All existing roads will be left in a condition equal to their condition prior to the construction of the transmission line. Towers will be sited with a minimum distance of 200 feet from perennial streams wherever possible.	P, C
<i>P = Pre-construction, C=Construction, and O = Operation</i>			
<b>Project Design, Access, and Construction (Continued)</b>			
16	Construction, restoration	Tri-State or its contractors would repair or reconstruct existing roads or trails if they were damaged by construction activities associated with the SJBEC Project.	C, O
17	Construction, restoration	In construction areas where ground disturbance is substantial or where recontouring is required, surface restoration will occur as required by the landowner or land management agency for erosion control. The method of restoration will normally consist of, but not be limited to, returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, and placing water bars in the road. All areas on BLM lands that are disturbed as a part of the construction or maintenance of the proposed transmission line will be seeded, to 70 percent of existing cover, where practicable, with a seed mixture appropriate for those areas. The BLM will prescribe a seed mixture that fits each range site.	C, O
<i>P = Pre-construction, C=Construction, and O = Operation</i>			
<b>Groundwater, Surface Water, and Wetlands</b>			
21	Surface water, drainage crossings	If necessary, low water crossings will be designed and constructed in a manner that will prevent any blockage or restriction of the existing channel.	P, C, O
22	Water quality	A buffer strip of vegetation, width determined on a case-by-case basis, will be left between areas of surface disturbance and riparian vegetation.	P, C, O
23	Water quality	Tri-State will identify all streams in the vicinity of the proposed project sites that are listed as impaired under Section 303(d) of the CWA and will develop a management plan to avoid, reduce, or minimize adverse effects to those streams if the SJBEC Project could affect these areas.	P
24	Water quality	Runoff from excavated areas, construction materials or wastes (including truck washing and concrete washes), and chemical products such as oil, grease, solvents, fuels, and pesticides will be controlled and contained. Excavated material or other construction material will not be stockpiled or deposited near or on stream banks, ditches, irrigation canals, or other areas where runoff could affect the environment.	C
25	Water quality	Washing concrete trucks or disposing excess concrete in any ditch, canal, stream, or other surface water will not be permitted. Concrete wastes will be disposed of in	C



Exhibit

## Environmental Protection Measures and Design Standards

No.	Topic	Description of Measure	Phase
		accordance with all federal, state, and local regulations.	
26	Wetlands	Transmission structures and access roads will be routed outside of wetland areas to the greatest extent feasible.	P, C

*P = Pre-construction, C=Construction, and O = Operation*

### Vegetation and Soils Management

27	Reclamation and noxious weeds	The Final POD will include a reclamation and noxious weed management plan, which will be approved by the appropriate agency prior to the issuance of a right-of-way grant. The noxious weed management plan will be developed in accordance with appropriate land management agencies' standards, consistent with applicable regulations and agency permitting stipulations for the control of noxious weeds and invasive species (Executive Order 3112). Included in the noxious weed plan will be stipulations regarding construction, restoration, and operation.	P, C, O
28	Vegetation and soil, construction	Clearing, grading, and other disturbance of vegetation and soil will be limited to the minimum area required..	C, O
29	Vegetation, construction	In construction areas where recontouring is not required, vegetation will be left in place wherever possible, and original contour will be maintained to avoid excessive root damage and allow for resprouting.	C
30	Vegetation	For safe operation of the transmission line, vegetation removal will be limited to areas that would create a threat to the electrical reliability of the transmission line or would impede access to the line for safe operations. Except for dangerous vegetation, which is defined as vegetation that could grow in, fall in, blow in, or be a fuel loading hazard in the right-of-way, no clearing would be performed outside of the limits of the right-of-way.	O
31	Vegetation, removal	Clearing will be performed so as to minimize marring and scarring the countryside and to preserve the natural beauty to the maximum extent possible.	C, O
32	Vegetation, treatment	Use of pesticides and herbicides shall comply with applicable federal and state laws.	C, O
33	Soils, drainage and erosion control	A SWPPP will be prepared for the SJBEC Project and will be included as part of the Final POD. Implementation of the SWPPP will manage erosion and provide adequate drainage around structure and tower sites. Excavated material will be spread around the site from where it was excavated.	C, O
34	Soils, construction	No construction or routine maintenance activities will be performed when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 6 inches deep, the soil will be deemed too wet to work.	C, O
35	Soils, construction	Grading will be minimized by driving overland within work areas whenever possible.	C, O
36	Soils, restoration	In newly disturbed temporary work areas, the soil will be salvaged and will be distributed and contoured evenly over the surface of the disturbed area after construction is completed. The soil surface will be left rough to help reduce potential wind erosion.	C, O
37	Soils, restoration	Topsoil removed during construction will be stockpiled and used in reclamation.	C

*P = Pre-construction, C=Construction, and O = Operation*

Exhibit

## Environmental Protection Measures and Design Standards

No.	Topic	Description of Measure	Phase
<b>Biological Resources</b>			
38	Biological, special status species	Special status species or other species of particular concern will be considered in accordance with management policies set forth by appropriate land-management agencies. This will entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities as agreed upon by the responsible land-management agencies. In cases where such species are identified, appropriate action will be taken to avoid adverse effects to the species and its habitat and may include monitoring and altering the placement of roads or towers, where practicable.	P, C, O
39	Biological, special status species	The Final POD will include a biological stipulations provided by the BLM and the USFWS, which will identify measures to avoid, minimize, or mitigate effects to special status species..	P, C, O
40	Biological, special status species	Prior to the start of construction, Tri-State will provide training to all contractor and subcontractor personnel and others involved in construction activities where there is a known occurrence of protected species or habitat in the construction area. Sensitive areas will be considered avoidance areas. Prior to any construction activity, avoidance areas will be marked on the ground and maintained through the duration of the contract. Tri-State will remove markings during or following final inspection of the project.	P, C
41	Biological, special status species	If evidence of a protected species is found in the project area, the contractor will immediately notify the appropriate land management agencies and provide the location and nature of the findings. The contractor will stop all activity within 200 feet of the protected species or habitat.	C
42	Biological, special status species	Tri-State will comply with any and all environmental protection and mitigation measures identified by the USFWS, BLM, BIA, and SUIT in the Section 7 consultation, regarding federally listed, candidate, proposed species.	P, C, O
43	Biological, migratory birds	Given the scope of the proposed project, it is likely that avoiding construction during the avian breeding season is not possible. Prior to construction during the avian breeding season, Tri-State will coordinate appropriate mitigation measures with the BLM, BIA, SUIT, and USFWS.	P, C

*P = Pre-construction, C=Construction, and O = Operation*

Exhibit

## Environmental Protection Measures and Design Standards

No.	Topic	Description of Measure	Phase
<b>Biological Resources (Continued)</b>			
44	Biological, wildlife	<p>Seasonal restrictions may be implemented in certain areas to mitigate effects to wildlife. With the exception of emergency repair situations, right-of-way construction, restoration, maintenance, and termination activities in designated areas will be modified or discontinued during sensitive periods (such as nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species, as required by permitting and land management agencies. The Final POD will incorporate the seasonal restrictions and stipulations contained in the ROD. A seasonal restriction of November 1<sup>st</sup> through March 31<sup>st</sup> will be implemented for the bald eagle roost located near the Iron Horse substation. Other seasonal restrictions include:</p> <ul style="list-style-type: none"> <li>• Migratory Birds – May 1st through July 31st</li> <li>• Southwestern Willow Flycatcher and Yellow-Billed Cuckoo – May 1st through August 31st</li> <li>• Peregrine and Prairie Falcons – March 1st through June 30th</li> <li>• Golden Eagle – February 1st through June 30th</li> <li>• Western Burrowing Owl – April 1st through August 15th</li> </ul>	P, C, O
45	Biological, wildlife and livestock	Tri-State will repair holes created by construction of transmission structures to avoid and minimize effects to wildlife and livestock	C
46	Biological, raptors	The transmission line design will consider the Avian Power Line Interaction Committee's suggested practices for avian protection on power lines.	P, C
47	Biological, raptors	Tri-State will follow BLM, Colorado Parks and Wildlife, and USFWS guidelines for raptor protection during the breeding season (Migratory Bird Executive Order 13186, January 10, 2001).	P, C, O
<b>Hazardous Materials, Waste, and Wastewater Management</b>			
78	Storage and removal	Tri-State will provide a Hazardous Materials Management Plan. Hazardous material shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.	C, O
79	Hazardous materials, vehicles	Vehicle refueling and servicing activities would be performed in the right-of-way or in designated construction zones located more than 300 feet from wetlands and streams. Spill preventative and containment measures or practices would be incorporated as needed.	C, O
80	Hazardous materials, spills	Tri-State will provide a spill prevention notification and cleanup plan. The SJBEC Project will comply with all applicable federal, state, and local regulations, and will include: spill prevention measures, notification procedures in the event of a spill, employee awareness training, and commitment of manpower, equipment, and materials to respond to spills, if they occur.	P, C, O

P = Pre-construction, C=Construction, and O = Operation





